

# Photographic Record Cascade Mine Drainage

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DSL-AMRB 91-001

Near Towns of Centerville, Stockett and Belt  
Cascade County, Montana



December, 1992  
Robert Peccia & Associates



**ATTACHMENT H**  
**Photographs/Slides**

SECRET

WFOC



## **CASCADE MINE DRAINAGE PROJECT**

Only two copies of this final report were submitted with photographs and/or slides. Those copies reside with the Department of State Lands - Abandoned Mine Reclamation Bureau. A listing of the photograph/slide legend is provided below. Please contact the AMRB to obtain project photographs.

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**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
1	8/1/91	Centerville C site:	existing access culvert area prior to removing.
2	8/1/91	Centerville C site:	existing access culvert area prior to removing.
3	8/1/91	Centerville C site:	mobilizing equipment and materials.
4	8/1/91	Centerville C site:	mobilizing equipment and materials.
5	8/1/91	Centerville C site:	removing existing access culvert with backhoe and loader.
6	8/1/91	Centerville C site:	existing wetland access prior to work.
7	8/1/91	Centerville C site:	removing existing access culvert with backhoe and loader.
8	8/1/91	Centerville C site:	removing existing access culvert with backhoe and loader.
9	8/07/91	Centerville C site:	trench for interceptor drain #1 showing seeps in trench wall.
10	8/07/91	Centerville C site:	trench for interceptor drain #1 showing seeps in trench wall.
11	8/07/91	Centerville C site:	trench for interceptor drain #1 looking north towards existing 4" pipe. Note oxidized soils on trench wall.
12	8/07/91	Centerville C site:	trench for interceptor drain #1 looking south. Note seepage in trench bottom.
13	8/07/91	Centerville C site:	hole excavated to locate existing 4" pipe to tie in with interceptor drain #1.
14	8/08/91	Centerville C site:	Placing geocomposite material for interceptor drain #1. The 2 x 4's are used to hold material in place against trench walls.
15	8/08/91	Centerville C site:	Excavating trench for interceptor drain #1. Backhoe is filling trench with geocomposite material in place.
16	8/08/91	Centerville C site:	Excavating trench for interceptor drain #1. Backhoe is filling trench with geocomposite material in place.
17	8/08/91	Centerville C site:	Excavating trench for interceptor drain #1. Backhoe is backfilling trench with geocomposite material in place.
18	8/08/91	Centerville C site:	interceptor drain #1 partially backfilled with geocomposite material in place.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
19	8/12/91	Centerville C site:	placing geocomposite material with perforated pipe in interceptor drain #1.
20	8/12/91	Centerville C site:	placing second layer of geocomposite material in trench for interceptor drain #1. The second tier was added to get more complete collection of acid seepage.
21	8/12/91	Centerville C site:	partially backfilled interceptor drain #1. Looking north at one cleanout.
22	8/12/91	Centerville C site:	looking north at partially backfilled interceptor drain #1.
23	8/12/91	Centerville C site:	reggraded slope above interceptor drain #1 looking south between last two cleanouts.
24	8/13/91	Centerville C site:	excavating trench for interceptor drain #1.
25	8/13/91	Centerville C site:	area prepared for excavation of interceptor drain #2.
26	8/13/91	Centerville C site:	form placed in trench for bentonite seal to be poured at junction of perforated and PVC pipe in interceptor drain #1.
27	8/14/91	Centerville C site:	temporary tie in with existing 4" pipe for interceptor drain #2.
28	8/14/91	Centerville C site:	backfilling interceptor drain #2. Note seepage in trench bottom.
29	8/14/91	Centerville C site:	acid mine drainage seeping from trench wall of interceptor drain #2. (Note clay horizon at base of trench.)
30	8/15/91	Centerville C site:	cleanout installed in interceptor drain #2.
31	8/15/91	Centerville C site:	backfilling interceptor drain #2.
32	8/15/91	Centerville C site:	close up of cleanout installed in perforated pipe in interceptor drain #2.
33	8/15/91	Centerville C site:	unloading manholes with crane. Manhole weighed approximately 17,000 pounds.
34	8/19/91	Centerville C site:	looking west from interceptor drain #3 towards cleared and grubbed wetland cells.
35	8/19/91	Centerville C site:	prepared area for excavating interceptor drain #3.



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**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
36	8/19/91	Centerville C site:	placing service hole #1.
37	8/19/91	Centerville C site:	placing service hole #1.
38	8/19/91	Centerville C site:	Existing 4" pipe when cut to place tie in for interceptor drain #3. Approximately 20 gpm flowed from pipe. This water was backed up in the existing 4" pipe due to clogging in the pipe.
39	8/19/91	Centerville C site:	Existing 4" pipe when cut to place tie in for interceptor drain #3. Approximately 20 gpm flowed from pipe. This water was backed up in the existing 4" pipe due to clogging in the pipe.
40	8/20/91	Centerville C site:	water flowing from wall of trench for interceptor drain #3 near existing 4" pipe due to backed up water in pipe.
41	8/20/91	Centerville C site:	water flowing from wall of trench for interceptor drain #3 near existing 4" pipe due to backed up water in pipe.
42	8/20/91	Centerville C site:	cleaning existing 4" pipe using water jet.
43	8/20/91	Centerville C site:	cleaning existing 4" pipe using water jet. Pipe flowed full for approximately 90 seconds then dissipated to 5 gpm.
44	8/20/91	Centerville C site:	flow in existing 4" pipe after cleaning with water jet.
45	8/20/91	Centerville C site:	looking west from interceptor drain #3 towards cleared and grubbed wetland cells. Note service hole #1 in place and cleared and grubbed area for bypass line.
46	8/21/91	Centerville C site:	excavating trench for interceptor drain #3. Fill is being hauled around to the backhoe for use in backfilling the trench.
47	8/21/91	Centerville C site:	double cleanout installed in existing 4" pipe above interceptor drain #1. There were no cleanouts in the existing pipe.
48	8/21/91	Centerville C site:	looking west from interceptor drain #3 towards cleared and grubbed wetland cells. Note service hole #1 in place and initiation of excavation for bypass line.
49	8/21/91	Centerville C site:	form for bentonite seal in interceptor drain #3.
50	8/21/91	Centerville C site:	view from west of highway (at mouth of Heal Coulee) looking east at Centerville C site.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
51	8/22/91	Centerville C site:	French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.
52	8/22/91	Centerville C site:	French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.
53	8/22/91	Centerville C site:	French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.
54	8/22/91	Centerville C site:	French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.
55	8/22/91	Centerville C site:	geocomposite material placed across French drain in interceptor drain #3.
56	8/22/91	Centerville C site:	partially backfilled interceptor drain #3. Note triple tiered fabric at end of trench.
57	8/22/91	Centerville C site:	area prepared for excavation of trench for interceptor drain #4.
58	8/22/91	Centerville C site:	area prepared for excavation of trench for interceptor drain #4.
59	8/27/91	Stockett S.E.:	mobilization to site and access entry preparation.
60	8/29/91	Stockett S.E.:	west slope excavation for interceptor drain and connection to existing 4" PVC.
61	8/29/91	Stockett S.E.:	west slope exposed previous french drain near adit, repaired.
62	8/29/91	Stockett S.E.:	west slope excavation for interceptor drain and connection to existing 4" PVC.
63	8/29/91	Stockett S.E.:	west slope excavation for interceptor drain and connection to existing 4" PVC.
64	9/3/91	Stockett S.E.:	west slope excavation for interceptor drain with Case 980, near cleanout #40.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
65	9/3/91	Stockett S.E.:	west slope interceptor drain installation and backfill with loader, near cleanout #40.
66	9/3/91	Stockett S.E.:	west slope interceptor drain installation, near cleanout #40, checking grade. Note wire attached to board and geocomposite to hold in place.
67	9/3/91	Stockett S.E.:	west slope interceptor drain installation, near cleanout #40, seeps within layers of clay soils.
68	9/10/91	Stockett S.E.:	north west slope grading preparation for trenching of interceptor drain.
69	9/10/91	Stockett S.E.:	north west slope grading preparation for trenching of interceptor drain.
70	9/10/91	Stockett S.E.:	north west slope existing seeps.
71	9/10/91	Stockett S.E.:	north west slope existing seeps.
72	9/10/91	Stockett S.E.:	north west slope existing seeps.
73	9/10/91	Stockett S.E.:	north west slope existing seeps.
74	9/10/91	Stockett S.E.:	north west slope existing seeps.
75	9/10/91	Stockett S.E.:	north slope existing seeps.
76	9/10/91	Stockett S.E.:	north slope existing seeps.
77	9/10/91	Stockett S.E.:	north east slope existing seeps.
78	9/10/91	Stockett S.E.:	north east slope existing seeps.
79	9/10/91	Stockett S.E.:	east slope existing seeps.
80	9/10/91	Stockett S.E.:	east slope existing seeps.
81	9/10/91	Stockett S.E.:	south east slope existing seeps.
82	9/10/91	Stockett S.E.:	south east slope existing seeps.
83	9/10/91	Stockett S.E.:	east slope existing access road.
84	9/10/91	Stockett S.E.:	south east coulee prior to work.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
85	9/10/91	Stockett S.E.:	south end of site looking north.
86	9/10/91	Stockett S.E.:	overview of south west end of site.
87	9/10/91	Stockett S.E.:	overview of north west end of site.
88	9/10/91	Stockett S.E.:	overview of south west end of site.
89	9/10/91	Stockett S.E.:	overview of north west end of site.
90	9/10/91	Stockett S.E.:	overview of north west end of site.
91	9/10/91	Stockett S.E.:	overview of north slope existing seeps.
92	9/10/91	Stockett S.E.:	overview of north west slope existing seeps.
93	9/10/91	Stockett S.E.:	overview of north west slope existing seeps.
94	9/10/91	Stockett S.E.:	overview of north east slope existing seeps.
95	9/10/91	Stockett S.E.:	overview of north east slope existing seeps.
96	9/10/91	Stockett S.E.:	overview of north east slope existing seeps.
97	9/10/91	Stockett S.E.:	overview of south east slope existing seeps.
98	9/10/91	Stockett S.E.:	overview of south east end of site and south east coulee.
99	9/11/91	Coversoil Borrow area:	test holes.
100	9/11/91	Coversoil Borrow area:	test holes.
101	9/11/91	Coversoil Borrow area:	test holes.
102	9/11/91	Coversoil Borrow area:	test holes.
103	9/11/91	Coversoil Borrow area:	test holes.
104	9/11/91	Coversoil Borrow area:	site overview, agricultural field.
105	9/11/91	Coversoil Borrow area:	site overview, agricultural field.
106	9/11/91	Coversoil Borrow area:	site overview, agricultural field.
107	9/11/91	Coversoil Borrow area:	site overview, agricultural field.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
108	9/11/91	Coversoil Borrow area:	site overview, agricultural field.
109	9/11/91	Coversoil Borrow area:	site overview, agricultural field.
110	9/17/91	Stockett S.E.:	south east coulee trench for interceptor drain.
111	9/17/91	Stockett S.E.:	south east coulee trench for interceptor drain.
112	9/17/91	Stockett S.E.:	south east coulee trench for interceptor drain.
113	9/17/91	Stockett S.E.:	at south east coulee looking north, grade preparation for excavation. of interceptor drain.
114	9/17/91	Stockett S.E.:	installing SW service hole with crane.
115	9/17/91	Stockett S.E.:	SW service hole, to date installation of valves and couplings.
116	9/18/91	Stockett S.E.:	east slope interceptor drain installation, water in trench.
117	9/18/91	Stockett S.E.:	east slope interceptor drain installation, water in trench.
118	9/18/91	Stockett S.E.:	east slope interceptor drain installation, water in trench.
119	9/18/91	Stockett S.E.:	east slope interceptor drain installation, site overview looking north.
120	9/18/91	Stockett S.E.:	east slope interceptor drain installation, site overview looking north.
121	9/19/91	Stockett S.E.:	west slope site overview.
122	9/24/91	Stockett S.E.:	south east coulee, view from below, landowner fencing in foreground.
123	9/24/91	Stockett S.E.:	east slope view from below.
124	9/24/91	Stockett S.E.:	east slope view from below.
125	9/24/91	Stockett S.E.:	north east slope view from below.
126	9/24/91	Stockett S.E.:	north slope view from below.
127	9/24/91	Stockett S.E.:	west slope overview.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
128	9/25/91	Centerville C site:	applying bentonite to soil for preparation of premix soil/bentonite seal used for ends of interceptor drains and limestone trenches.
129	10/15/91	Centerville C site:	wetland construction, scraper building up dike.
130	10/15/91	Centerville C site:	wetland construction, scraper building up dike.
131	10/15/91	Centerville C site:	wetland construction, grader working dike, D7 helping borrow fill material on north slope.
132	10/15/91	Centerville C site:	wetland construction cell 1, tractor and compactor.
133	10/15/91	Centerville C site:	wetland construction, grader working dike of cells 2 & 3, backhoe helping.
134	10/15/91	Centerville C site:	D7 helping borrow fill material on north slope.
135	10/15/91	Centerville C site:	wetland construction cell 1, tractor and compactor.
136	10/15/91	Centerville C site:	wetland construction, grader working dike of cells 2 & 3.
137	10/15/91	Centerville C site:	wetland construction, grader working dike of cells 2 & 3, freshly watered cell 2 for dust control.
138	11/13/91	Centerville C site:	1 of 3 panorama, wetland construction north end, loader moving coversoil.
139	11/13/91	Centerville C site:	2 of 3 panorama, wetland construction cells 2 & 3, fine grading with JD 555, motorgrader and D7. Case 980 excavating for pipe from limestone trench to service hole
140	11/13/91	Centerville C site:	3 of 3 panorama, wetland construction cells 1 & 2.
141	11/14/91	Stockett S.E.:	south west end lime application by hand.
142	11/20/91	Centerville C site:	upper area north of existing 4"PVC line, trench excavation for additional interceptor drain, little indication of seepage.
143	11/20/91	Centerville C site:	cell 1 hand application and incorporation of bentonite with tiller attachment to tractor.
144	11/20/91	Centerville C site:	cell 1 bentonite incorporation, cells 2 & 3 placement of weir outlet structures.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
145	11/20/91	Centerville C site:	upper area north of existing 4"PVC line, trench excavation for additional interceptor drain, Case 980 excavator.
146	3/6/92	Stockett S.E.:	access junction near entrance and lime stockpile.
147	3/6/92	Stockett S.E.:	outlet of SW pipe in road ditch.
148	3/6/92	Stockett S.E.:	west limestone trench with survey control point on left side of photo.
149	3/6/92	Stockett S.E.:	west limestone trench, looking south, Marko house in upper right of photo.
150	3/6/92	Stockett S.E.:	future location of west wetland channel.
151	3/6/92	Stockett S.E.:	future location of west wetland channel.
152	3/6/92	Stockett S.E.:	future location of west wetland channel.
153	3/6/92	Stockett S.E.:	future location of west wetland channel and junction with north wetland channel.
154	3/6/92	Stockett S.E.:	future location of west wetland channel outlet.
155	3/6/92	Stockett S.E.:	slope below future location of west wetland channel.
156	3/6/92	Stockett S.E.:	future location of west wetland channel.
157	3/17/92	Centerville C site:	wetland cell 2 compaction of bentonite seal.
158	3/17/92	Centerville C site:	wetland cell 2 compaction of bentonite seal, closeup shows slope hump.
159	3/17/92	Centerville C site:	wetland cell 2 pipe trenching and installation.
160	3/17/92	Centerville C site:	wetland cell 2 pipe trenching and installation.
161	3/17/92	Centerville C site:	wetland cell 2 pipe trenching and installation. Hand lime application on hill in background.
162	3/17/92	Centerville C site:	applying lime by hand on upper slope, NE corner.
163	3/18/92	Centerville C site:	compacting bentonite seal in wetland cell 2, wet conditions, tiller equipment for mixing bentonite and soil in background.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
164	3/18/92	Centerville C site:	lime incorporation and shaping with D7 cat at steep area #1, workers waiting for lime load behind Cat.
165	3/18/92	Centerville C site:	steep area #1, using loader to deliver lime, placement and application by hand, backhoe incorporation of lime above.
166	3/23/92	Centerville C site:	weekend precipitation created puddles in cells, required additional spreading/mixing in cell bottoms prior to compaction.
167	3/23/92	Centerville C site:	premixing soil/bentonite seal with grader.
168	3/23/92	Centerville C site:	premixing soil/bentonite seal with grader, loader helping and placing in premix pile left of loader. Manure and filter gravel stockpiles in background.
169	3/30/92	Stockett S.E.:	shaping west wetland channel with JD 450.
170	3/30/92	Stockett S.E.:	shaping west wetland channel with JD 510, spoils from north wetland channel in background.
171	3/30/92	Stockett S.E.:	start of shaping north wetland channel, outlet end.
172	3/30/92	Stockett S.E.:	start of shaping north wetland channel.
173	3/30/92	Stockett S.E.:	NW limestone trench, forms and piping.
174	3/31/92	Stockett S.E.:	west wetland channel bentonite soil seal incorporation.
175	3/31/92	Stockett S.E.:	north wetland channel shaping and filling low spots with JD 450 and JD 555.
176	3/31/92	Centerville C site:	start of excavation of surface water collection basin, bypass piping on right, wetland basins and coversoil stockpiles in background, service hole and limestone trench on left.
177	3/31/92	Centerville C site:	cleaning out liner key trenches and cleaning basin bottom for liner preparation.
178	4/1/92	Centerville C site:	cell 2 preparing cell bottom by spreading fine and thin layer of soil/bentonite mix to fill in voids > 1".
179	4/1/92	Centerville C site:	cell 2 key trench, compacting soils around weir outlet structure.





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PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
180	4/1/92	Stockett S.E.:	west wetland channel after bentonite incorporation and before compaction, lots of rock picking needed.
181	4/1/92	Stockett S.E.:	west wetland channel after bentonite incorporation and before compaction, looking north.
182	4/1/92	Stockett S.E.:	north wetland channel bentonite application.
183	4/1/92	Centerville C site:	start of liner installation cell 2.
184	4/1/92	Centerville C site:	liner seaming.
185	4/2/92	Stockett S.E.:	bentonite incorporation north wetland channel.
186	4/2/92	Centerville C site:	liner attachment to weir outlet structure.
187	4/2/92	Centerville C site:	liner attachment to weir outlet structure.
188	4/2/92	Centerville C site:	start of gravel placement on cushion fabric, cell 1, built gravel ramp at centralized cell access location.
189	4/3/92	Centerville C site:	cell 2 and 3 after liner placement and before cushion fabric placement.
190	4/3/92	Centerville C site:	cell 2 start of cushion fabric placement.
191	4/3/92	Centerville C site:	cell 1 gravel placement, visitors in black.
192	4/3/92	Centerville C site:	limestone trench placement of cushion fabric prior to liner.
193	4/3/92	Centerville C site:	limestone trench placement of cushion fabric prior to liner, lots of watchers.
194	4/3/92	Centerville C site:	limestone trench liner placement by liner crew.
195	4/3/92	Stockett S.E.:	west wetland channel excavating key trenches at baffle locations.
196	4/3/92	Stockett S.E.:	using ditch witches to dig key trenches at wetland channels, west channel outlet foreground, north channel outlet background.
197	4/3/92	Stockett S.E.:	west wetland channel baffle key trench, rough and prior to additional placement of bentonite/soil seal.
198	4/3/92	Centerville C site:	liner crew using available space at Centerville to prefabricate liner for limestone trenches.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
199	4/4/92	Centerville C site:	start of gravel placement in cell 2, built gravel ramp at centralized cell access location.
200	4/6/92	Stockett S.E.:	west wetland channel compaction of bentonite/soil seal.
201	4/6/92	Stockett S.E.:	excavating for repair of blocked pipe near SE coulee.
202	4/6/92	Stockett S.E.:	SW limestone trench with liner and cushion fabric, west wetland channel in background.
203	4/7/92	Stockett S.E.:	west wetland channel starting to place hypalon liner.
204	4/7/92	Stockett S.E.:	west wetland channel just prior to liner placement. Note bags of gravel used to hold baffle key from collapse during forklift access.
205	4/7/92	Stockett S.E.:	north wetland channel preparation for liner placement, key trench and basin cleaning.
206	4/7/92	Stockett S.E.:	north wetland channel preparation for liner placement, key trenching with ditch witch.
207	4/7/92	Stockett S.E.:	west wetland channel starting to place hypalon liner.
208	4/8/92	Stockett S.E.:	north wetland channel preparation for liner placement, key trenching with JD 510 helping hold ditch witch from sliding.
209	4/8/92	Stockett S.E.:	north wetland channel preparation for liner placement, key trenching with JD 510 helping hold ditch witch from sliding.
210	4/8/92	Stockett S.E.:	north wetland channel preparation for liner placement, key trenching with JD 510 helping hold ditch witch from sliding, worker standing in rough baffle key trench.
211	4/8/92	Stockett S.E.:	north wetland channel preparation for liner placement, filling over excavated baffle key trenches with premix of bentonite/soil then hand compacting and shaping.
212	4/9/92	Stockett S.E.:	north wetland channel at telephone interceptor outlet prior to liner placement.
213	4/9/92	Stockett S.E.:	north wetland channel at telephone interceptor outlet prior to liner placement.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
214	4/9/92	Stockett S.E.:	north wetland channel, lay out of liner. Note bags used for weighing down liner in case of wind. Filter gravel in bags was later used as riprap.
215	4/9/92	Stockett S.E.:	north wetland channel, lay out of liner.
216	4/13/92	Centerville C site:	perforated pipe placement in wetland cell.
217	4/13/92	Centerville C site:	limestone aggregate placement in limestone trench.
218	4/14/92	Centerville C site:	limestone aggregate placement in limestone trench.
219	4/14/92	Stockett S.E.:	trench above telephone pole interceptor prior to PVC pipe placement.
220	4/14/92	Stockett S.E.:	site overview at trench above telephone pole interceptor during PVC pipe placement.
221	4/14/92	Stockett S.E.:	site overview at north end of site. Note stockpiled coversoil.
222	4/14/92	Stockett S.E.:	site overview at north end of site.
223	4/14/92	Stockett S.E.:	NW limestone trench, installing limestone aggregate.
224	4/14/92	Stockett S.E.:	limestone trench common problem, tears of liner corners, patched later.
225	4/14/92	Stockett S.E.:	backfilling of telephone trench interceptor.
226	4/15/92	Centerville C site:	site overview, stockpiles, park, highschool.
227	4/15/92	Centerville C site:	site overview, stockpiles, water truck, park.
228	4/15/92	Centerville C site:	site overview, stockpiles, loader, park, start of peat placement in cell 1. Note gravel ramp and peat spilled.
229	4/15/92	Centerville C site:	site overview, stockpiles, loaders, town, start of peat placement in cell 1. Note gravel ramp in cell 2 and loader tracks on peat.
230	4/15/92	Centerville C site:	site overview, loader, JD 450, final grading of gravel in cell 2. Note gravel ramp in cell 2, lower left.
231	4/15/92	Centerville C site:	site overview, north slope and outlet channel.
232	4/15/92	Stockett S.E.:	west wetland channel, hypalon liner in place.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
233	4/15/92	Stockett S.E.:	limestone trench corner tear in liner later patched, gap between liner and plywood form was later filled with bentonite/soil mix.
234	4/15/92	Stockett S.E.:	limestone trench closeup of corner tear in liner.
235	4/15/92	Stockett S.E.:	SW limestone trench, S end, corner problems required re-excavation and repair.
236	4/15/92	Stockett S.E.:	SW limestone trench, S end, corner problems required re-excavation and repair.
237	4/16/92	Stockett S.E.:	intersection of interceptor drains, downgradient crossover to match source water oxygen concentrations.
238	4/16/92	Stockett S.E.:	intersection of interceptor drains, upgradient crossover to match source water oxygen concentrations.
239	4/21/92	Stockett S.E.:	north channel looking northeast during placement of riprap dikes.
240	4/21/92	Stockett S.E.:	1 of 5 panorama of west side from south end to north end.
241	4/21/92	Stockett S.E.:	2 of 5 panorama of west side from south end to north end.
242	4/21/92	Stockett S.E.:	3 of 5 panorama of west side from south end to north end. JD 555 hauling riprap.
243	4/21/92	Stockett S.E.:	4 of 5 panorama of west side from south end to north end.
244	4/21/92	Stockett S.E.:	5 of 5 panorama of west side from south end to north end.
245	4/22/92	Centerville C site:	Newly found hand close adit, before.
246	4/22/92	Centerville C site:	Newly found hand close adit, during.
247	4/22/92	Centerville C site:	Newly found hand close adit, after.
248	4/22/92	Centerville C site:	looking west at site from top of knoll. Note cell 1 with hay bale dikes and cell 3 placing Peat-DCW. Limestone drain in center of photo.
249	4/22/92	Centerville C site:	1 of 4 panorama from south to north overlooking access road to wetland and ball park. Coversoil and manure stockpiles. Truck hauling Peat-DCW.
250	4/22/92	Centerville C site:	2 of 4 panorama from south to north overlooking cell 1 with hay bale dikes in place and manhole 1.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
251	4/22/92	Centerville C site:	3 of 4 panorama from south to north cell 2 with gravel in place and cell 3 peat-DPW being placed. Note JD 450 fine grading peat.
252	4/22/92	Centerville C site:	4 of 4 panorama from south to north overlooking north end of project. JD 450 on gravel ramp into cell 3.
253	4/24/92	Cell 2 + Cell 3. Centerville C site:	peat-OM being mixed in cell 2 with loader.
254	4/24/92	Centerville C site:	peat-OM consisting of straw, limestone aggregate and manure in cell 2.
255	4/24/92	Centerville C site:	cell 1 after being filled with fresh water.
256	4/27/92	Centerville C site:	placing straw with loader for peat-OM mix in north end of Cell 2.
257	4/27/92	Centerville C site:	culvert in place in north channel.
258	4/27/92	Centerville C site:	staking hay bale dikes in cell 3.
259	4/28/92	Centerville C site:	auger drilling post holes for fence on north end.
260	4/28/92	Centerville C site:	mixing peat-OM with JD 450 in cell 2.
261	4/28/92	Centerville C site:	channel on Marko's property, west of site. Note salvaged 12" PVC pipe.
262	4/28/92	Centerville C site:	looking west from cell 3 at Marko's channel. Note stock tank prior to installation.
263	4/28/92	Centerville C site:	graded channel on Marko's property. Looking southeast towards wetland.
264	4/28/92	Centerville C site:	looking east from Marko's property toward east slope.
265	4/28/92	Centerville C site:	looking west at grade of channel on Marko's property.
266	4/28/92	Centerville C site:	graded area for stock tank placement.
267	4/28/93	Centerville C site:	1 of 2 panorama of wetland cells. JD 450 mixing peat-OM.
268	4/28/92	Centerville C site:	2 of 2 panorama of wetland cells. Loader placing coversoil along cell 2 dike.
269	4/30/92	Centerville C site:	straw supply from Chartier property.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
270	5/01/92	Centerville C site:	unloading trees for Centerville Park.
271	5/01/92	Centerville C site:	sprinkling water on cattails at cell 1.
272	5/01/92	Centerville C site:	planting cattails in cell 3.
273	5/01/92	Centerville C site:	planting cattails in cell 3.
274	5/01/92	Centerville C site:	planting cattails in cell 3.
275	5/01/92	Centerville C site:	closeup of cattails and best shovel type.
276	5/01/92	Centerville C site:	excavation for transplanting trees.
277	5/01/92	Centerville C site:	transplanting trees.
278	5/04/92	Centerville C site:	1 of 4 panorama of wetland cells from south to north.
279	5/04/92	Centerville C site:	2 of 4 panorama of wetland cells from south to north.
280	5/04/92	Centerville C site:	3 of 4 panorama of wetland cells from south to north.
281	5/04/92	Centerville C site:	4 of 4 panorama of wetland cells from south to north.
282	5/05/92	Centerville C site:	fresh water from cell 3 released into Marko's channel making grading difficult.
283	5/05/92	Centerville C site:	excavated material from Marko's channel to correct grade. Water in channel made final grading very difficult.
284	5/05/92	Centerville C site:	water in Marko's channel made final grading difficult.
285	5/05/92	Centerville C site:	regrading Marko channel to correct grade.
286	5/05/92	Centerville C site:	regrading Marko channel to correct grade.
287	5/05/92	Centerville C site:	placing/mixing peat-OM in cell 2 with JD 450.
288	5/06/92	Stockett S.E.:	incorporating lime with disk on east side of site.
289	5/06/92	Stockett S.E.:	limed area in southeast coulee.
290	5/06/92	Stockett S.E.:	covering NE limestone trench.
291	5/06/92	Stockett S.E.:	covering NE limestone trench.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
292	5/13/92	Centerville C site:	1 of 5 panorama from south to north, fuel truck.
293	5/13/92	Centerville C site:	2 of 5 panorama from south to north, loader, trees in park.
294	5/13/92	Centerville C site:	3 of 5 panorama from south to north, loader, cells 1 and 2.
295	5/13/92	Centerville C site:	4 of 5 panorama from south to north, cells 2 and 3.
296	5/13/92	Centerville C site:	5 of 5 panorama from south to north, cell 2, loader placing coversoil on north slope.
297	5/13/92	Centerville C site:	grading west side of wetland dikes.
298	5/13/92	Centerville C site:	west side wetland, moving coversoil.
299	5/13/92	Centerville C site:	north channel final grade, grading west side wetland dikes.
300	5/13/92	Centerville C site:	north channel and placing coversoil on north slope.
301	5/13/92	Centerville C site:	grade on west side of wetland dikes.
302	5/13/92	Centerville C site:	grading west side of wetland dikes and placing coversoil on north slope.
303	5/13/92	Stockett S.E.:	north wetland channel peat placement.
304	5/13/92	Stockett S.E.:	north wetland channel peat placement.
305	5/14/92	Stockett S.E.:	cleanout # 39 leaking again.
306	5/19/92	Stockett S.E.:	repair of southwest interceptor drain found to be plugged and was backed-up and leaking from cleanout #39 up gradient.
307	5/19/92	Stockett S.E.:	repair of southwest interceptor drain. Excavation of old trench to expose geocomposite and pipe.
308	5/19/92	Stockett S.E.:	repair of southwest interceptor drain. Excavation of old trench to expose geocomposite and pipe.
309	5/19/92	Stockett S.E.:	leaking cleanout indicating a plugged interceptor drain.
310	5/19/92	Stockett S.E.:	leaking cleanout indicating a plugged interceptor drain.
311	5/19/92	Stockett S.E.:	SE limestone trench ready to be covered, bypass line installation on right.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
312	5/19/92	Stockett S.E.:	exposed geocomposite in southwest interceptor drain. (Note seeping wall not covered by geocomposite.)
313	5/20/92	Stockett S.E.:	partially crushed perforated pipe found while trying to tie new interceptor drain into existing pipe.
314	5/20/92	Stockett S.E.:	partially crushed perforated pipe found while trying to tie new interceptor drain into existing pipe.
315	5/20/92	Stockett S.E.:	geocomposite in place at tie-in for new interceptor drain.
316	5/20/92	Stockett S.E.:	geocomposite in place at tie-in for new interceptor drain.
317	5/20/92	Stockett S.E.:	excavating trench for new interceptor drain.
318	5/20/92	Stockett S.E.:	new interceptor drain installed at seep on north end of project; shows exposed trench wall.
319	5/20/92	Stockett S.E.:	backfilling new interceptor drain (3 tiers of geocomposite).
320	5/20/92	Stockett S.E.:	SW limestone trench after being graded.
321	5/20/92	Stockett S.E.:	SW limestone trench outlet to south wetland channel.
322	5/20/92	Stockett S.E.:	west wetland channel looking north. Shows wetland cells filled with peat and limestone aggregate and riprap dikes.
323	5/20/92	Stockett S.E.:	SW manhole after grading.
324	5/20/92	Stockett S.E.:	liming slope on south west end where interceptor drain was replaced due to crushed pipe.
325	5/21/92	Stockett S.E.:	adit #1 after closure.
326	5/21/92	Stockett S.E.:	adit #1 showing opening which needs further closure.
327	5/21/92	Stockett S.E.:	adit #1 after closure looking north.
328	5/26/92	Stockett S.E.:	geocomposite and perforated pipe prefabrication and installation.
329	5/26/92	Stockett S.E.:	geocomposite and perforated pipe prefabrication and installation.
330	5/26/92	Stockett S.E.:	trench excavation for additional interceptor drain on lower north hill.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
331	5/26/92	Stockett S.E.:	trench excavation for additional interceptor drain on lower north hill.
332	5/26/92	Stockett S.E.:	sewer snaking at cleanout # 57.
333	5/26/92	Stockett S.E.:	two precipitate type extracted during snaking of cleanout # 57.
334	5/26/92	Stockett S.E.:	west side outlet pipe in road ditch.
335	5/26/92	Stockett S.E.:	west side outlet pipe in road ditch.
336	5/26/92	Stockett S.E.:	west side outlet pipe in road ditch after removal of elbow.
337	5/26/92	Stockett S.E.:	trench at tie in location of additional north interceptor drain.
338	5/26/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain.
339	5/26/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain.
340	5/26/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain.
341	5/26/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain.
342	5/26/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain.
343	5/28/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain, repairing overnight and 5/27/92 weather day collapsed trench.
344	5/28/92	Stockett S.E.:	installation of geocomposite at additional north interceptor drain, repairing overnight collapsed trench.
345	5/28/92	Stockett S.E.:	down gradient of SW service hole, cause of plug evident from cleanout # 57, replaced with straight pipe.
346	5/28/92	Stockett S.E.:	down gradient of SW service hole, cause of plug evident from cleanout # 57, replaced with straight pipe. Note precipitate in pipe.
347	5/28/92	Stockett S.E.:	start of excavation to find plug in interceptor drain at SE coulee.
348	5/28/92	Stockett S.E.:	start of excavation to find plug in interceptor drain at SE coulee.
349	5/28/92	Stockett S.E.:	exposed geocomposite in interceptor drain at SE coulee.
350	5/28/92	Stockett S.E.:	closeup of sewer snake end on left and sewer tape end on right.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
351	6/01/92	Stockett S.E.:	removing spoils pile at confluence of north and south wetland channels.
352	6/01/92	Stockett S.E.:	north wetland channel filled with sediment from recent rains, flow bypass line shown.
353	6/01/92	Stockett S.E.:	north wetland channel filled with sediment from recent rains.
354	6/01/92	Stockett S.E.:	north wetland channel near telephone pole showing side slope slumped into channel after recent rain and plugged bypass pipeline.
355	6/01/92	Stockett S.E.:	north wetland channel showing lime after incorporated by hand on far bank.
356	6/02/92	Stockett S.E.:	view of cleanout #11 prior to replacement of perforated pipe in interceptor drain.
357	6/02/92	Stockett S.E.:	excavation near cleanout #11 to expose interceptor drain.
358	6/02/92	Stockett S.E.:	top of existing geocomposite exposed near cleanout #11.
359	6/02/92	Stockett S.E.:	crushed perforated pipe being cut out and replaced.
360	6/02/92	Stockett S.E.:	perforated pipe and geocomposite replaced near cleanout #11; ready for backfill.
361	6/02/92	Stockett S.E.:	area near cleanout #11 after replacement and backfill.
362	6/02/92	Stockett S.E.:	geocomposite and PVC pipe near cleanout #9 being exposed for repair and replacement of perforated pipe. Shovel tip is on perforated pipe.
363	6/02/92	Stockett S.E.:	crushed perforated pipe exposed and being removed and replaced near cleanout #9. Clay clod backfill likely culprit.
364	6/03/92	Stockett S.E.:	crushed perforated pipe exposed and being removed and replaced near cleanout #9.
365	6/03/92	Stockett S.E.:	close up of crushed pipe replaced near cleanout #9.
366	6/03/92	Stockett S.E.:	close up of crushed pipe replaced near cleanout #9.
367	6/03/92	Stockett S.E.:	uncovering section of crushed perforated pipe by hand at cleanout #9. Adjacent solid PVC line is from the SE Coulee interceptor drain source.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
368	6/03/92	Stockett S.E.:	removing section of crushed perforated pipe near cleanout #9. (Note how geocomposite is cut to expose perforated pipe.)
369	6/03/92	Stockett S.E.:	removing section of crushed perforated pipe near cleanout #9. (Note how geocomposite is cut to expose perforated pipe.)
370	6/03/92	Stockett S.E.:	placing geocomposite patch around replaced section of crushed perforated pipe near cleanout #9. (Note replaced perforated pipe is black.)
371	6/03/92	Stockett S.E.:	placing geocomposite patch around replaced section of crushed perforated pipe near cleanout #9. (Note replaced perforated pipe is black.)
372	6/03/92	Stockett S.E.:	adit #1 after second attempt to close.
373	6/03/92	Stockett S.E.:	adit #1 after all openings adequately closed.
374	6/03/92	Centerville C site:	1 of 2 panorama of site from north to south. Shows stilling basin filled with water and sediment. Sediment was removed later.
375	6/03/92	Centerville C site:	2 of 2 panorama of site from north to south. Shows cell 3 and most of cell 2.
376	6/04/92	Stockett S.E.:	cutting geocomposite material to expose crushed perforated pipe near cleanout #27.
377	6/04/92	Stockett S.E.:	exposed section of crushed perforated pipe near cleanout #27. (Note geocomposite in place along trench wall.)
378	6/04/92	Stockett S.E.:	crushed sections of perforated pipe (2' and 5') replaced near cleanout #7. Backfill method and type suspect in crushing problem.
379	6/04/92	Stockett S.E.:	showing perforated pipe prior to replacing crushed section to check for additional blockage. Additional blockage found approximately 30 feet down gradient.
380	6/04/92	Stockett S.E.:	placing geocomposite patch around replaced perforated pipe (black).
381	6/04/92	Stockett S.E.:	backfilling replaced section of interceptor drain near cleanout #27.
382	6/04/92	Stockett S.E.:	placing geocomposite patch around replaced perforated pipe (2') near cleanout #28.
383	6/04/92	Centerville C site:	JD 555 with rippers lowered preparing to go down steep east slope to incorporate lime.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
384	6/04/92	Centerville C site: JD 555 ripping east slope to incorporate lime.	
385	6/04/92	Centerville C site: JD 555 ripping east slope to incorporate lime.	
386	6/04/92	Centerville C site: east slope after one pass with rippers. Slope was ripped again to better incorporate lime.	
387	6/04/92	Centerville C site: terrace on east slope (location of interceptor drain #3) after liming and prior to final grading.	
388	6/08/92	Centerville C site: cattails in cell 3 (planted 5/01/92) showing poor cattail growth compared to cell 1.	
389	6/08/92	Centerville C site: cattails in cell 3 (planted 5/01/92). Floating green scum on surface.	
390	6/08/92	Centerville C site: cattails in cell 1 (planted 5/01/92) showing good cattail growth (green tops) compared to cell 3.	
391	6/08/92	Stockett S.E.: exposed geocomposite and perforated pipe near cleanout #27.	
392	6/08/92	Stockett S.E.: inserting sewer tape in pipe to check for additional blockage prior to replacing crushed perforated pipe.	
393	6/08/92	Stockett S.E.: crushed perforated pipe removed from interceptor drain near cleanout #27.	
394	6/08/92	Stockett S.E.: crushed perforated pipe removed from interceptor drain near cleanout #27. Clay clods and rock backfill culprit.	
395	6/08/92	Stockett S.E.: excavating second location near cleanout #28.	
396	6/08/92	Stockett S.E.: exposed crushed perforated pipe prior to removal near cleanout #28.	
397	6/08/92	Stockett S.E.: excavating a second location near cleanout #27.	
398	6/08/92	Stockett S.E.: exposed crushed perforated pipe prior to removal at second location near cleanout #27.	
399	6/08/92	Stockett S.E.: close up of crushed perforated pipe from previous photo.	
400	6/08/92	Stockett S.E.: close up of crushed perforated pipe from previous photo.	



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
401	6/08/92	Stockett S.E.:	exposed interceptor drain at second location near cleanout #27 prior to replacement. Another section of crushed pipe was discovered 4 feet from end of pipe.
402	6/08/92	Stockett S.E.:	additional crushed perforated pipe near cleanout #27.
403	6/09/92	Stockett S.E.:	total of 11' of crushed perforated pipe removed from near cleanout #27.
404	6/09/92	Stockett S.E.:	geocomposite patch placed around replaced perforated pipe near cleanout #27.
405	6/09/92	Stockett S.E.:	backfill repaired interceptor drain near cleanout #27. Note clay backfill.
406	6/09/92	Stockett S.E.:	excavation to expose crushed perforated pipe near cleanout #26.
407	6/09/92	Stockett S.E.:	replaced 4' section of perforated pipe and geocomposite patch near cleanout #26.
408	6/09/92	Stockett S.E.:	head of sewer tape used to snake perforated pipe to locate pipe blockages.
409	6/09/92	Stockett S.E.:	patched interceptor drain damaged during excavation.
410	6/09/92	Centerville C site:	limed soil from Marko's channel placed on north slope.
411	6/09/92	Centerville C site:	limed east slope prior to coversoil placement.
412	6/09/92	Centerville C site:	east slope during coversoil placement. Coversoil was pushed upslope from base and down from terrace using D-7 dozer.
413	6/09/92	Centerville C site:	spreading coversoil on east slope using D-7 dozer. Note JD 555 loader transporting coversoil to terrace.
414	6/10/92	Stockett S.E.:	exposed geocomposite and perforated pipe at second location near cleanout #26. Both perforated pipe and geocomposite were crushed.
415	6/10/92	Stockett S.E.:	crushed perforated pipe removed near cleanout #26. Backfill suspect.
416	6/10/92	Stockett S.E.:	patched geocomposite near cleanout #21 after replacing 1.5' of crushed perforated pipe.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
417	6/10/92	Stockett S.E.:	exposing interceptor drain near cleanout #38. Water is from plugged perforated pipe.
418	6/10/92	Stockett S.E.:	crushed perforated pipe to be removed near cleanout #38.
419	6/10/92	Stockett S.E.:	trench wall showing exposed interceptor drain near cleanout #38.
420	6/10/92	Stockett S.E.:	crushed perforated pipe (rock on pipe during backfill) removed from near cleanout #38. Pipe was partially filled with orange silt shown on right.
421	6/10/92	Centerville C site:	east slope prepared for placement of erosion control mat.
422	6/10/92	Centerville C site:	east slope prepared for placement of erosion control mat.
423	6/11/92	Centerville C site:	east slope prepared for placement of erosion control mat.
424	6/11/92	Centerville C site:	1 of 2 panorama of site. Limed soils on north slope. Looking toward Marko's property (west).
425	6/11/92	Centerville C site:	2 of 2 panorama of site. Note culvert on right, stock tank in far center and cell 3 on far left.
426	6/11/92	Stockett S.E.:	crushed perforated pipe being removed near cleanout #42.
427	6/11/92	Stockett S.E.:	crushed perforated pipe being removed near cleanout #42.
428	6/11/92	Stockett S.E.:	close up of crushed perforated pipe removed near cleanout #42.
429	6/22/92	Stockett S.E.:	center of photo shows geocomposite around crushed perforated pipe near cleanout #46. Rock was removed from this spot.
430	6/22/92	Stockett S.E.:	excavated interceptor drain to expose crushed perforated pipe near cleanout #46. Note backfill. Close up of pipe is shown in previous photo.
431	6/22/92	Centerville C site:	laying erosion control mat over east slope. Mat is keyed in every 50' down slope.
432	6/22/92	Centerville C site:	laying erosion control mat over east slope. Mat is keyed in every 50' down slope.
433	6/22/92	Centerville C site:	key trench on terrace at top of east slope.
434	6/22/92	Centerville C site:	laying erosion control mat on east slope. Mat is keyed in at top of slope and every 50' downslope.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
435	6/23/92	Centerville C site:	hydroseeding on upper east slope. Hydroseed being pumped up approximately 100'.
436	6/23/92	Stockett S.E.:	slumped area near north wetland channel after reshaping and liming.
437	6/23/92	Stockett S.E.:	looking upstream at north wetland channel from previous photo. Acid water in channel is leaking from inlet to channel because temporary by-pass is plugged.
438	6/23/92	Stockett S.E.:	upstream end of north wetland channel. By-pass (1" black PVC pipe) is plugged.
439	6/23/92	Stockett S.E.:	hydroseeding portions of wetland channel which could be reached from road.
440	6/23/92	Stockett S.E.:	hydroseeding portions of wetland channel which could be reached from road.
441	6/23/92	Stockett S.E.:	exposing crushed perforated pipe near cleanout #50.
442	6/23/92	Stockett S.E.:	perforated pipe removed from interceptor drain near cleanout #50. Crushed pipe regains shape several hours after being removed.
443	6/23/92	Stockett S.E.:	geocomposite cut back to expose crushed perforated pipe at second location near cleanout #50.
444	6/23/92	Stockett S.E.:	close up of crushed perforated pipe from previous photo.
445	6/23/92	Stockett S.E.:	geocomposite cut back to expose crushed perforated pipe near cleanout #51.
446	6/23/92	Stockett S.E.:	geocomposite cut back to expose crushed perforated pipe near cleanout #51.
447	6/23/92	Stockett S.E.:	close up of removed crushed perforated pipe from near cleanout #51.
448	6/23/92	Stockett S.E.:	geocomposite cut back to expose crushed perforated pipe at second location near cleanout #51.
449	6/24/92	Stockett S.E.:	close up of crushed perforated pipe removed from near cleanout #27.





**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
450	6/24/92	Stockett S.E.:	close up of crushed perforated pipe removed from near cleanout #27. This pipe has already been replaced once. During previous backfill, material was dropped on pipe instead of careful placement.
451	6/24/92	Centerville C site:	hydromulched slope and terrace above east slope.
452	6/24/92	Centerville C site:	view down east slope from terrace. Hydroseed was sprayed on top of erosion control mat as recommended by the manufacturer.
453	6/24/92	Centerville C site:	view from terrace of east slope of hydromulched areas in channel, on Marko's property and on cell dike walls.
454	6/24/92	Centerville C site:	view from terrace of east slope of hydromulched areas in channel, on Marko's property and on cell dike walls.
455	6/24/92	Centerville C site:	1 of 2 panorama from south to north overlooking cell 1 and cell 2. Tire tracks in cell 2 where JD 555 was used to dump coversoil on dike walls.
456	6/24/92	Centerville C site:	2 of 2 panorama overlooking cell 2 and cell 3. Note some cattail growth in cell 3, compared to 6/8/92, also weed growth in cell 2.
457	6/24/92	Centerville C site:	hydromulched east slope.
458	6/25/92	Stockett S.E.:	prepared seed bed prior to seeding near southeast coulee (center).
459	6/25/92	Stockett S.E.:	prepared seed bed. View looking northwest from southeast coulee.
460	6/25/92	Stockett S.E.:	seeding near southeast coulee. Brillon drill not distributing seed so seed is being broadcast from back of JD 555.
461	6/25/92	Stockett S.E.:	seeded, fertilized and mulched area along sides of north wetland channel.
462	6/25/92	Stockett S.E.:	seeded, fertilized and mulched area along sides of north wetland channel.
463	6/25/92	Stockett S.E.:	slump area along north wetland channel after seeding, fertilizing and mulching.
464	6/25/92	Stockett S.E.:	confluence of wetland channels after seeding, fertilizing and mulching.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
465	6/25/92	Stockett S.E.:	using Bowie mulcher to blow mulch on area near southeast coulee.
466	6/25/92	Stockett S.E.:	crushed perforated pipe removed from third location near cleanout #27. Pipe was likely caught and torn during sewer snaking or taping.
467	6/25/92	Stockett S.E.:	crushed perforated pipe removed from third location near cleanout #27. Pipe was likely caught and torn during sewer snaking or taping.
468	6/30/92	Centerville C site:	using plywood path for Bobcat in cell 2. Bobcat is carrying peat-OM into cell 2 for fine grading.
469	6/30/92	Centerville C site:	pec-mat placed in channel from stilling basin to culvert.
470	6/30/92	Centerville C site:	placing pec-mat in channel down stream from culvert. Mat is keyed in on edges and every 50' down length of channel.
471	7/07/92	Stockett S.E.:	1 of 3 panorama of site taken from road from north to south during seeding. Shows completed area.
472	7/07/92	Stockett S.E.:	2 of 3 panorama of site taken from road from north to south during seeding. North wetland channel in center.
473	7/07/92	Stockett S.E.:	3 of 3 panorama of site taken from road from north to south during seeding.
474	7/08/92	Centerville C site:	stock tank in place north of cell 3 outlet.
475	7/08/92	Centerville C site:	stock tank in place looking south toward cell 3.
476	7/08/92	Centerville C site:	stock tank in place with control valve in foreground.
477	7/08/92	Centerville C site:	outlet from cell 3 (stock tank by-pass) in channel with riprap protection.
478	7/08/92	Centerville C site:	1 of 3 panorama of site from south to north. Shows cell 1.
479	7/08/92	Centerville C site:	2 of 3 panorama of site from south to north. Shows cell 1. Shows crew laying plywood path for Bobcat during placement of hay bale dikes and fine grading.
480	7/08/92	Centerville C site:	3 of 3 panorama of site from south to north. Shows cell 2 outlet to cell 3 in center.
481	7/08/92	Stockett S.E.:	using Bowie mulcher to blow mulch over seeded areas.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
482	7/08/92	Stockett S.E.:	using Bowie mulcher to blow mulch over seeded areas.
483	7/08/92	Stockett S.E.:	main access to north end of site, just after seeding with Brillion seeder.
484	7/23/92	Centerville C site:	mulching wetland access and staging areas.
485	7/23/92	Centerville C site:	mulching wetland access and staging areas.
486	7/29/92	Centerville C site:	site overview.
487	7/29/92	Centerville C site:	upper NE corner finished slope above terrace, grass growing.
488	7/29/92	Belt Subsidence site:	access prior to work.
489	7/29/92	Belt Subsidence site:	access and subsidence prior to work.
490	7/29/92	Belt Subsidence site:	access prior to work.
491	7/29/92	Belt Subsidence site:	exploratory excavation of subsidence.
492	7/29/92	Belt Subsidence site:	mobilizing rock backfill.
493	7/29/92	Belt Subsidence site:	unloading rock backfill.
494	7/29/92	Belt Subsidence site:	unloading rock backfill.
495	7/29/92	Belt Subsidence site:	final backfilling and grading.
496	7/30/92	Centerville C site:	planting cattails in cell 2.
497	7/30/92	Centerville C site:	site overview.
498	7/31/92	Centerville C site:	watering newly planted cattails.
499	8/6/92	Centerville C site:	1 of 4 site panorama, access and park.
500	8/6/92	Centerville C site:	2 of 4 site panorama, park and wetland cells, planting last of cattails.
501	8/6/92	Centerville C site:	3 of 4 site panorama, planting last of cattails.
502	8/6/92	Centerville C site:	4 of 4 site panorama, north end.
503	8/6/92	Stockett S.E.:	west slope grass starting to show.



**CASCADE MINE DRAINAGE PROJECT  
PHOTOGRAPH/SLIDE LEGEND**

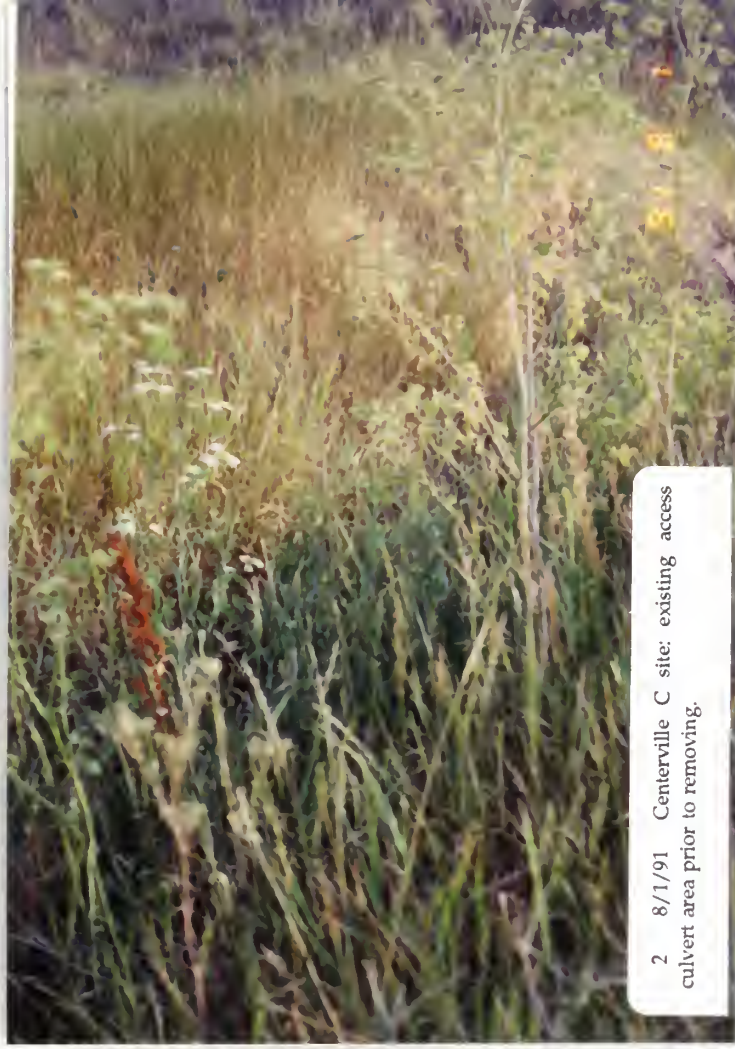
<u>Number</u>	<u>Date</u>	<u>Site Name</u>	<u>Description</u>
504	8/12/92	French Coulee site:	exposed manhole location, excavation for valve in background.
505	8/12/92	French Coulee site:	inside manhole after grouting.
506	8/12/92	French Coulee site:	inside manhole after grouting.
507	8/12/92	French Coulee site:	installed valve prior to backfill.
508	8/12/92	French Coulee site:	installed valve riser prior to backfill.
509	8/12/92	French Coulee site:	broken cleanout riser after excavation.
510	8/12/92	French Coulee site:	broken cleanout riser after excavation.
511	8/12/92	French Coulee site:	replacement cleanout riser prior to backfill.







1 8/1/91 Centerville C site: existing access  
culvert area prior to removing.



2 8/1/91 Centerville C site: existing access  
culvert area prior to removing.

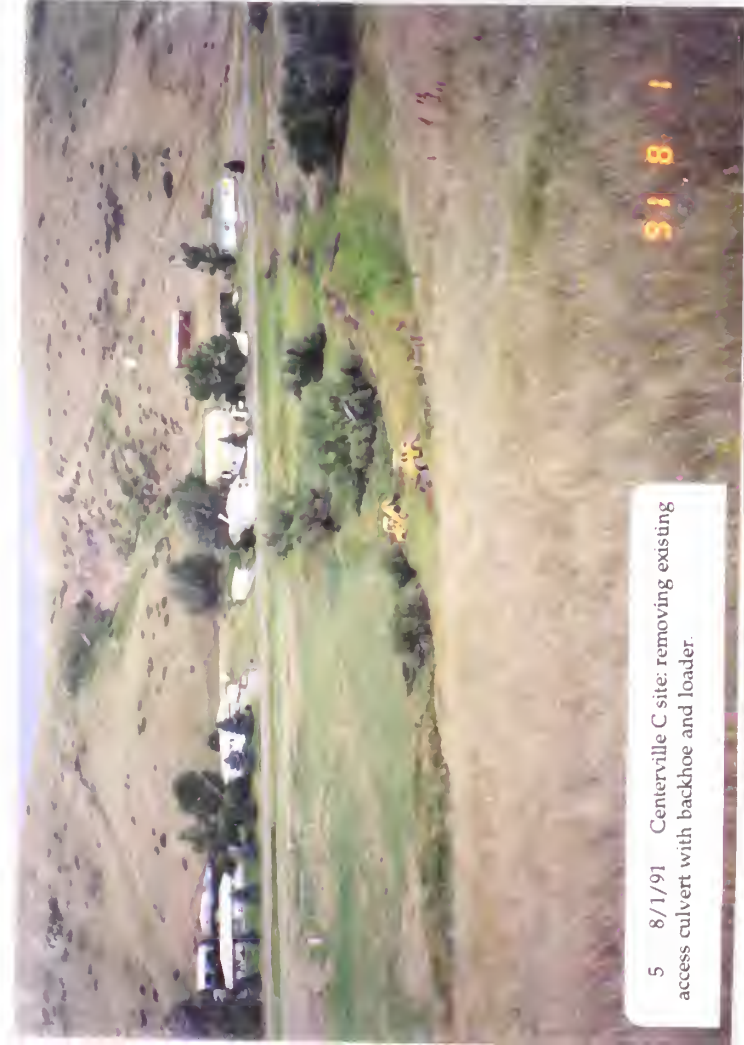


3 8/1/91 Centerville C site: mobilizing  
equipment and materials.



4 8/1/91 Centerville C site: mobilizing  
equipment and materials.





5 8/1/91 Centerville C site: removing existing access culvert with backhoe and loader.



6 8/1/91 Centerville C site: existing wetland access prior to work.



7 8/1/91 Centerville C site: removing existing access culvert with backhoe and loader.



8 8/1/91 Centerville C site: removing existing access culvert with backhoe and loader.

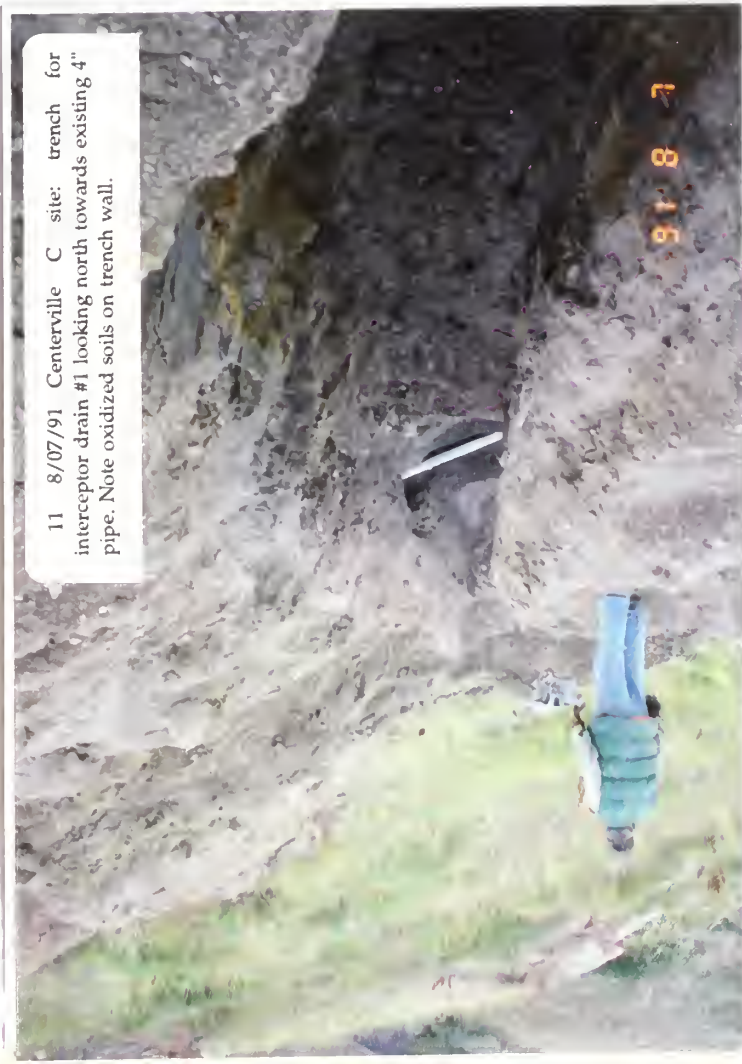




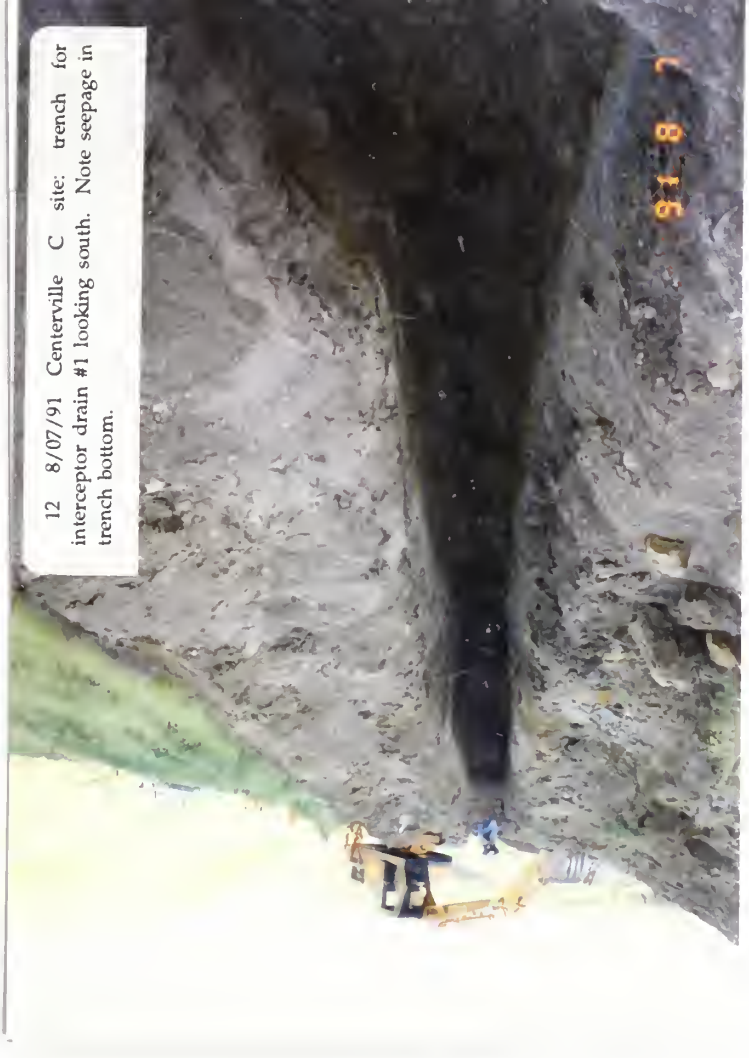
9 8/07/91 Centerville C site: trench for interceptor drain #1 showing seeps in trench wall.



10 8/07/91 Centerville C site: trench for interceptor drain #1 showing seeps in trench wall.

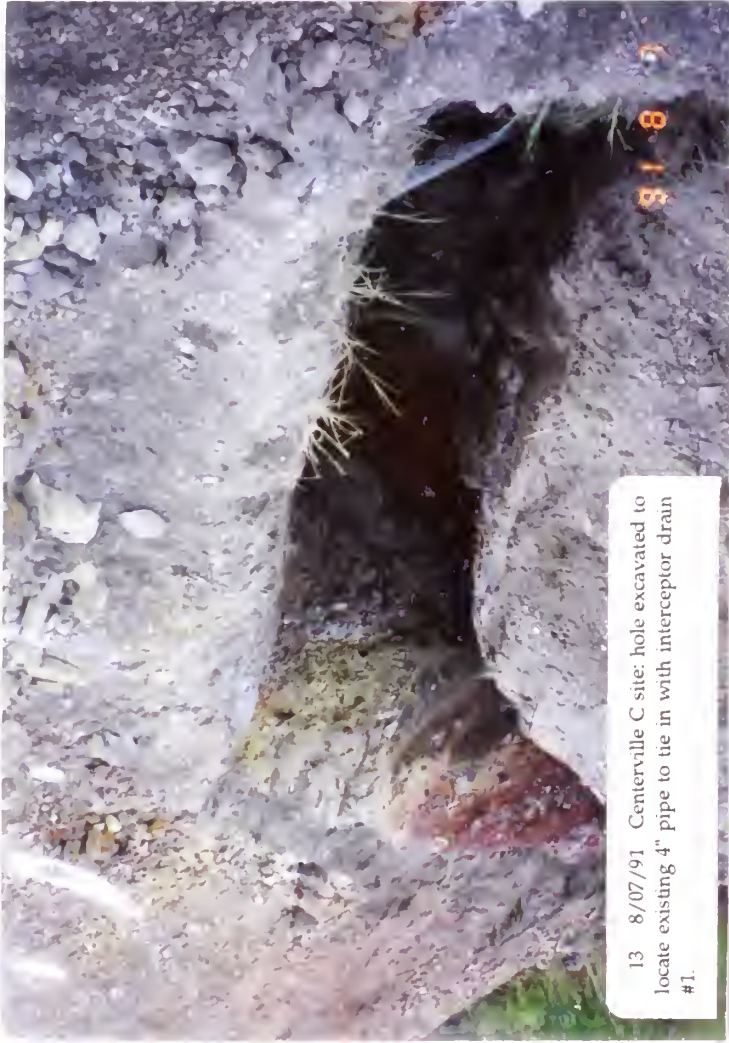


11 8/07/91 Centerville C site: trench for interceptor drain #1 looking north towards existing 4" pipe. Note oxidized soils on trench wall.



12 8/07/91 Centerville C site: trench for interceptor drain #1 looking south. Note seepage in trench bottom.





13 8/07/91 Centerville C site: hole excavated to locate existing 4" pipe to tie in with interceptor drain #1.



14 8/08/91 Centerville C site: Placing geocomposite material for interceptor drain #1. The 2 x 4's are used to hold material in place against trench walls.



15 8/08/91 Centerville C site: Excavating trench for interceptor drain #1. Backhoe is filling trench with geocomposite material in place.

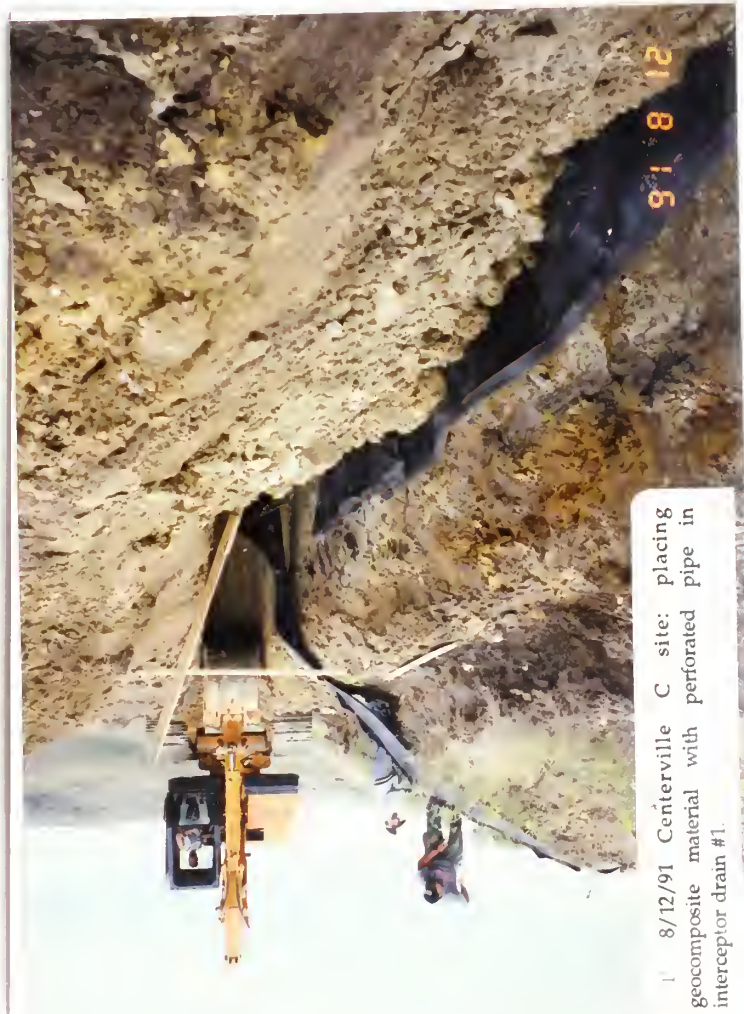


16 8/08/91 Centerville C site: Excavating trench for interceptor drain #1. Backhoe is filling trench with geocomposite material in place.

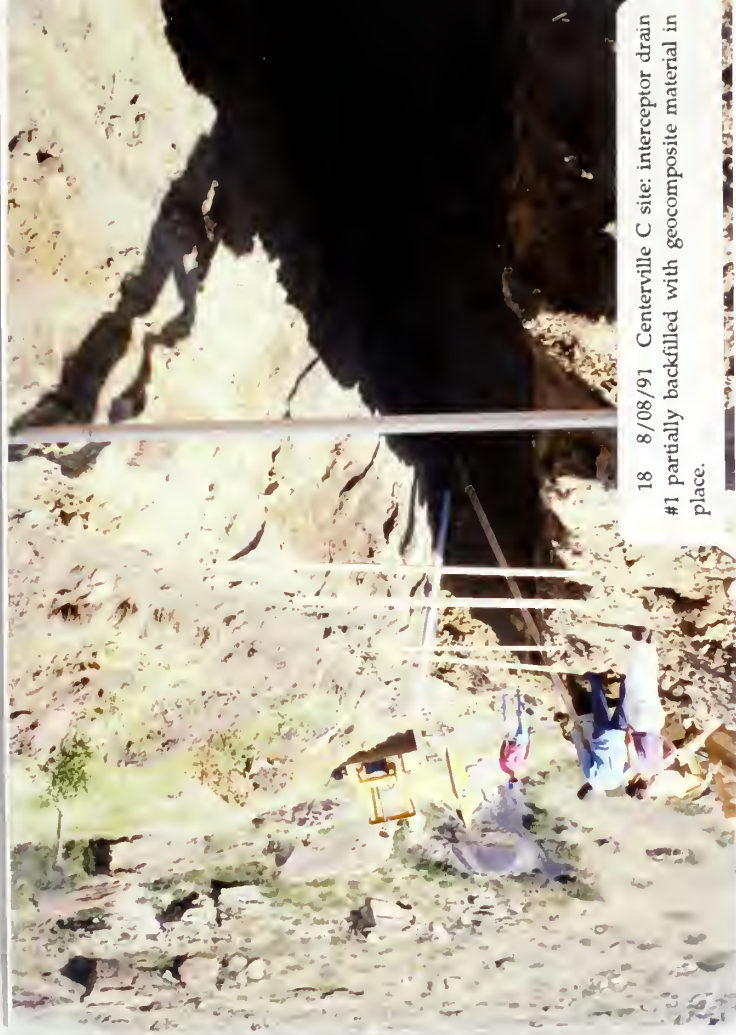




17 8/08/91 Centerville C site: Excavating trench for interceptor drain #1. Backhoe is backfilling trench with geocomposite material in place.



18 8/12/91 Centerville C site: placing geocomposite material with perforated pipe in interceptor drain #1.



19 8/08/91 Centerville C site: interceptor drain #1 partially backfilled with geocomposite material in place.

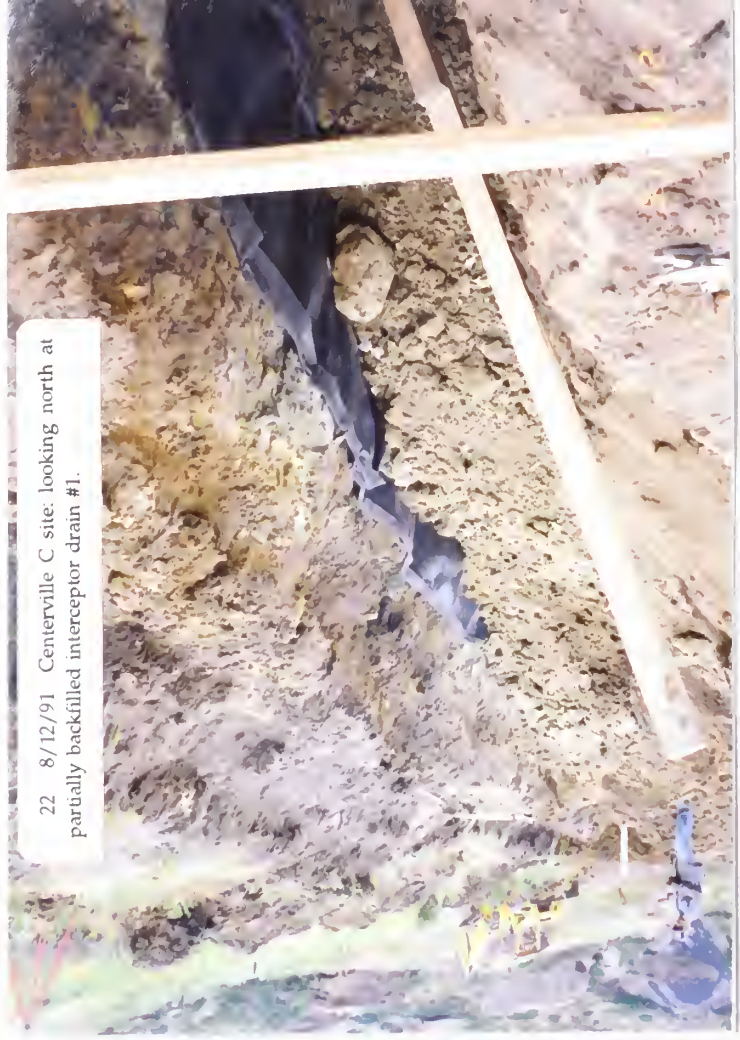


20 8/12/91 Centerville C site: placing second layer of geocomposite material in trench for interceptor drain #1. The second tier was added to get more complete collection of acid seepage.





21 8/12/91 Centerville C site; partially backfilled  
interceptor drain #1. Looking north at one cleanout.



22 8/12/91 Centerville C site; looking north at  
partially backfilled interceptor drain #1.

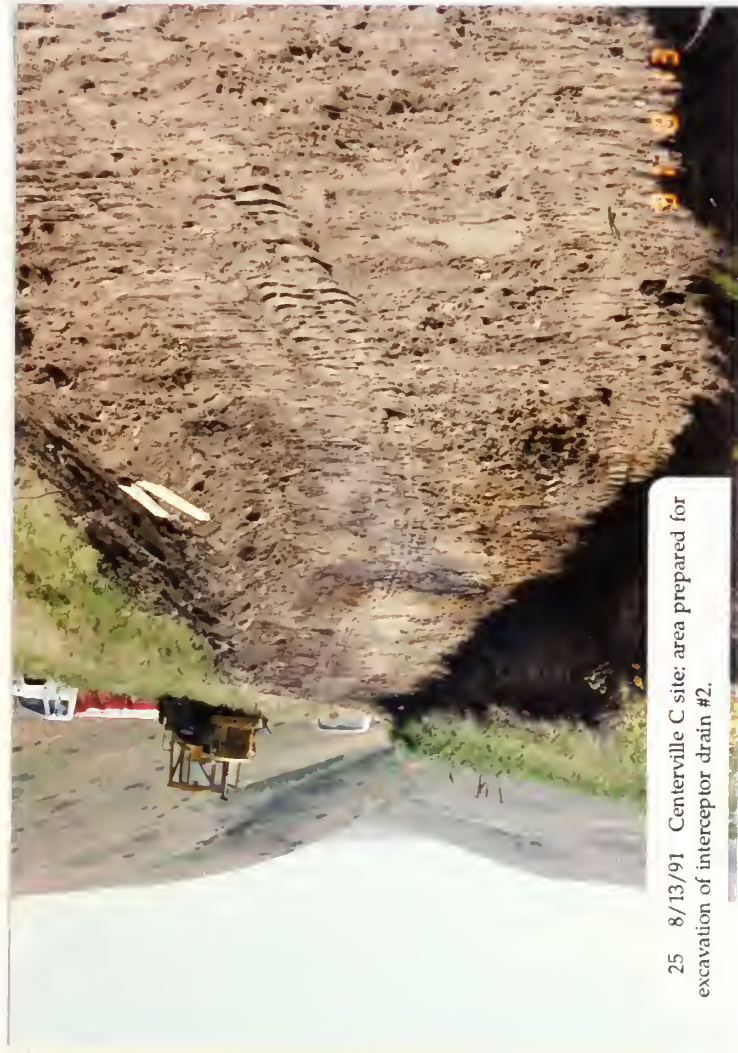


23 8/12/91 Centerville C site; regraded slope  
above interceptor drain #1 looking south between last  
two cleanouts.



24 8/13/91 Centerville C site; excavating trench  
for interceptor drain #1.

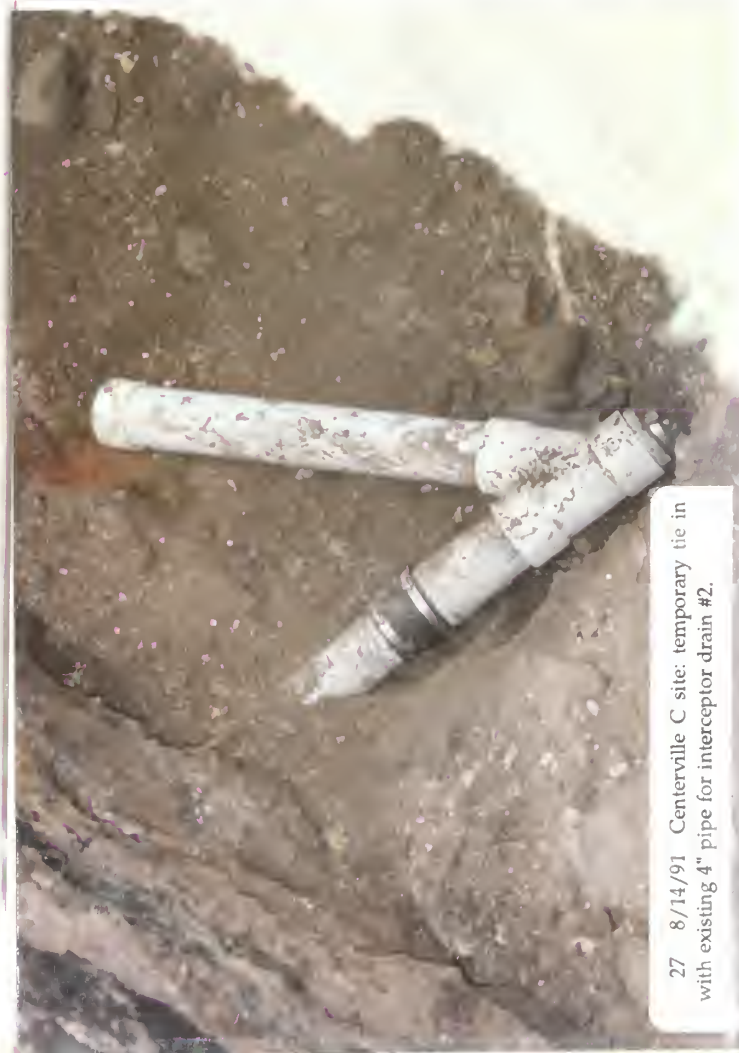




25 8/13/91 Centerville C site: area prepared for excavation of interceptor drain #2.



26 8/13/91 Centerville C site: form placed in trench for bentonite seal to be poured at junction of perforated and PVC pipe in interceptor drain #1.



27 8/14/91 Centerville C site: temporary tie in with existing 4" pipe for interceptor drain #2.



28 8/14/91 Centerville C site: backfilling interceptor drain #2. Note seepage in trench bottom.





29 8/14/91 Centerville C site: acid mine drainage seeping from trench wall of interceptor drain #2. (Note clay horizon at base of trench.)



30 8/15/91 Centerville C site: cleanout installed in interceptor drain #2.



31 8/15/91 Centerville C site: backfilling interceptor drain #2.



32 8/15/91 Centerville C site: close up of cleanout installed in perforated pipe in interceptor drain #2.





33 8/15/91 Centerville C site: unloading manholes with crane. Manhole weighed approximately 17,000 pounds.



34 8/19/91 Centerville C site: looking west from interceptor drain #3 towards cleared and grubbed wetland cells.



35 8/19/91 Centerville C site: prepared area for excavating interceptor drain #3.



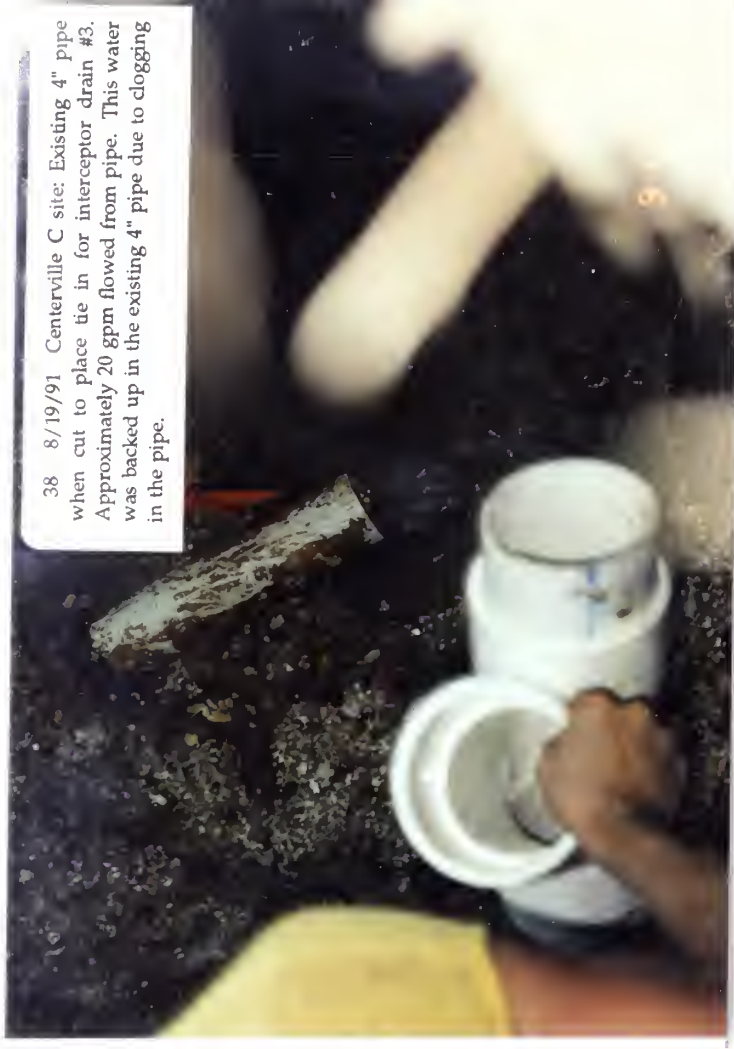
36 8/19/91 Centerville C site: placing service hole #1.



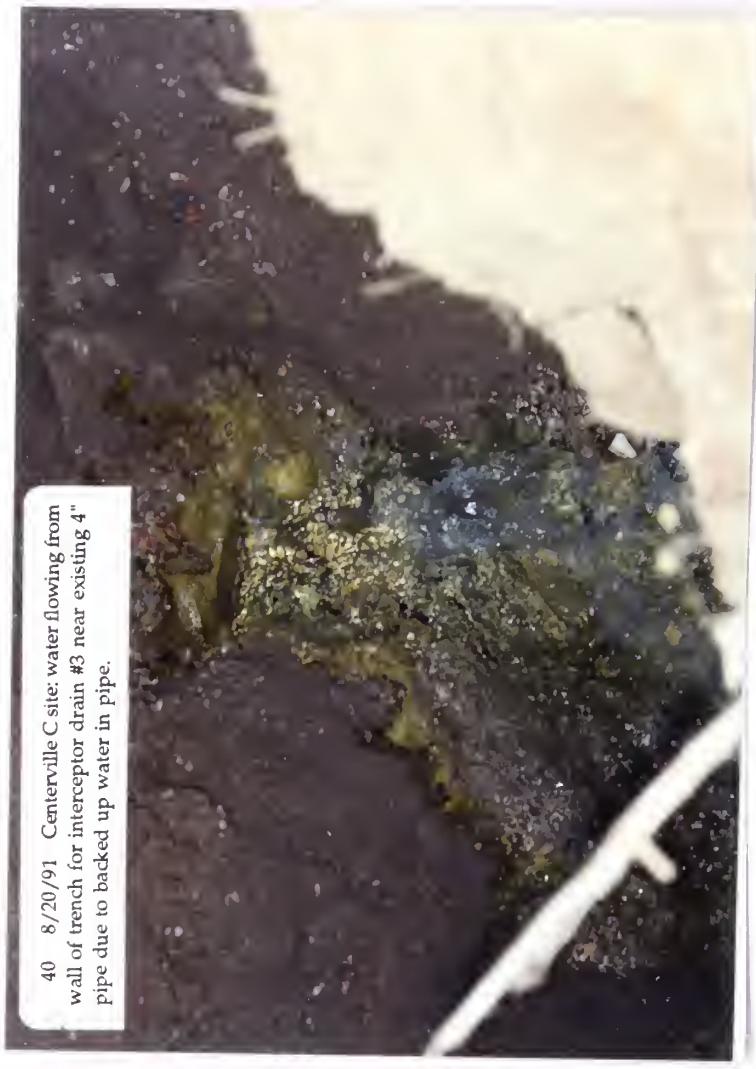
37 8/19/91 Centerville C site: placing service hole #1.



38 8/19/91 Centerville C site: Existing 4" pipe when cut to place tie in for interceptor drain #3. Approximately 20 gpm flowed from pipe. This water was backed up in the existing 4" pipe due to clogging in the pipe.



40 8/20/91 Centerville C site: water flowing from wall of trench for interceptor drain #3 near existing 4" pipe due to backed up water in pipe.



39 8/19/91 Centerville C site: Existing 4" pipe when cut to place tie in for interceptor drain #3. Approximately 20 gpm flowed from pipe. This water was backed up in the existing 4" pipe due to clogging in the pipe.





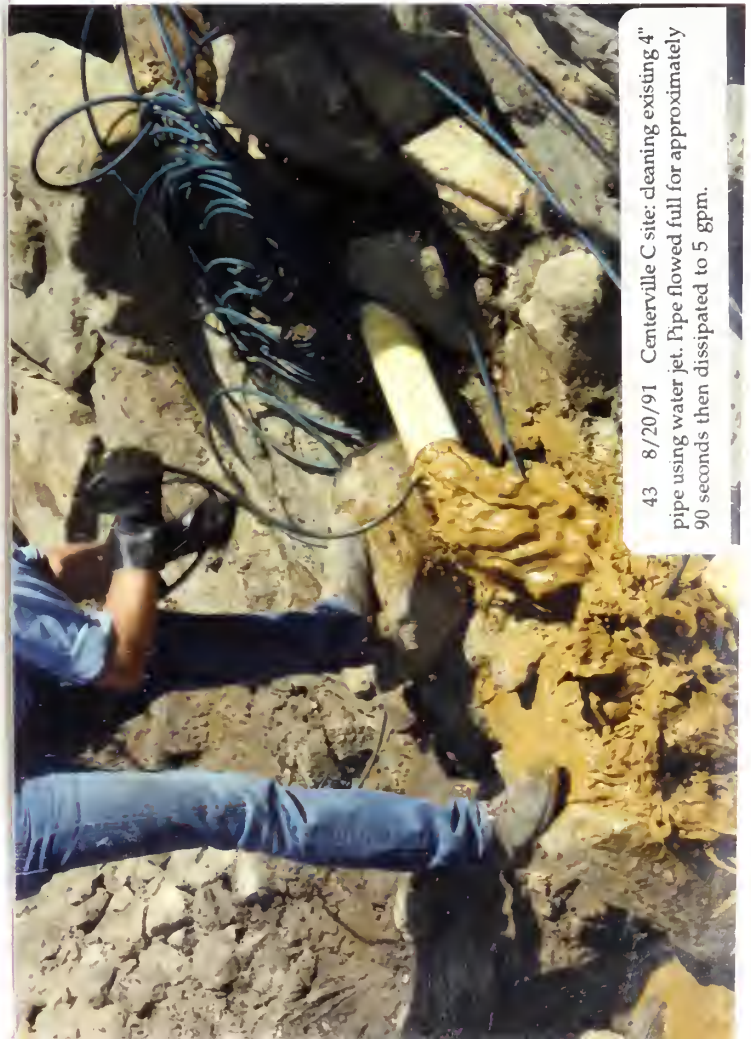
41 8/20/91 Centerville C site: water flowing from wall of trench for interceptor drain #3 near existing 4" pipe due to backed up water in pipe.



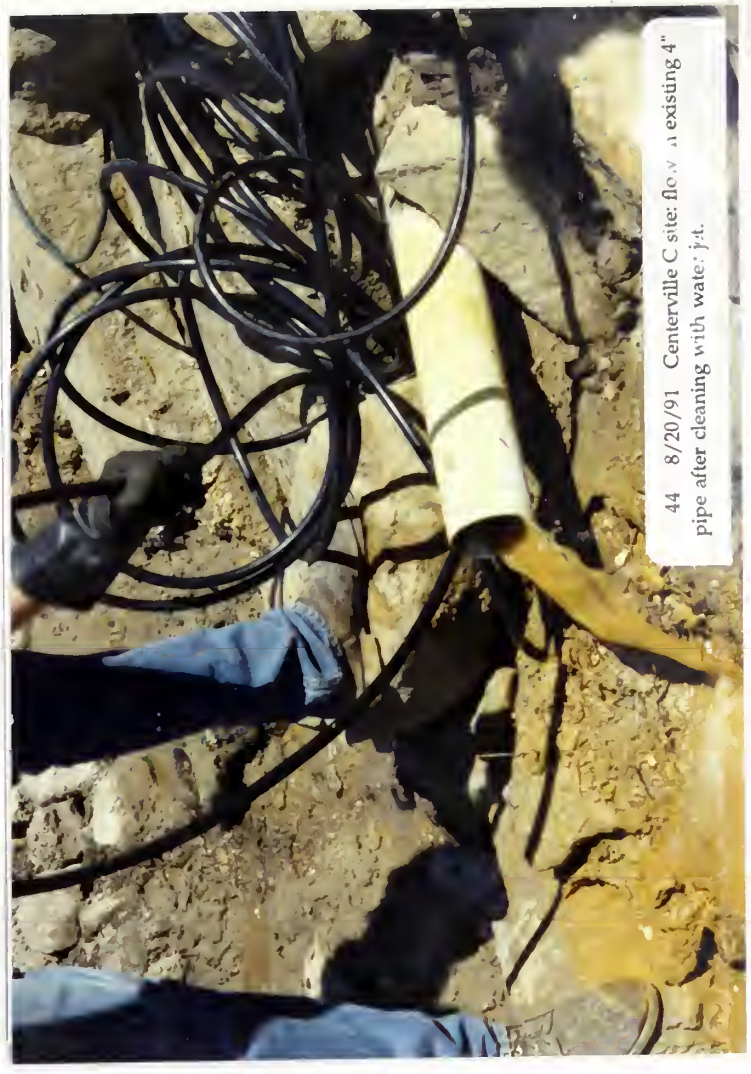
42 8/20/91 Centerville C site: cleaning existing 4" pipe using water jet.



43 8/20/91 Centerville C site: cleaning existing 4" pipe using water jet. Pipe flowed full for approximately 90 seconds then dissipated to 5 gpm.



44 8/20/91 Centerville C site: flow in existing 4" pipe after cleaning with water jet.





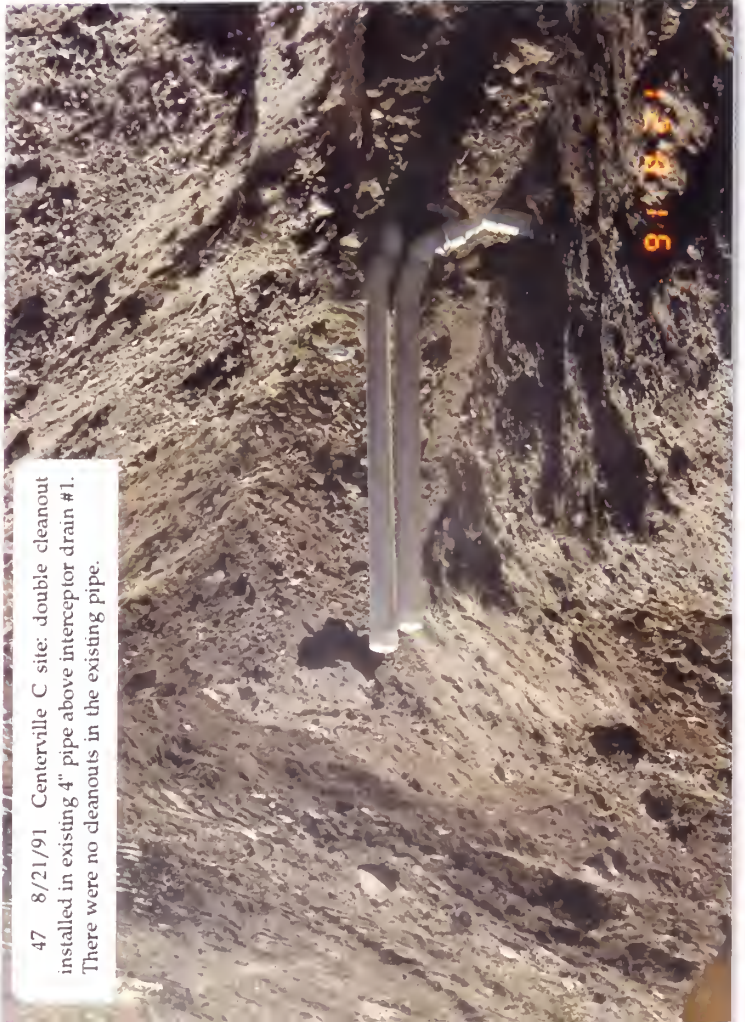
45 8/21/91 Centerville C site: looking west from interceptor drain #3 towards cleared and grubbed wetland cells. Note service hole #1 in place and cleared and grubbed area for bypass line.



46 8/21/91 Centerville C site: excavating trench for interceptor drain #3. Fill is being hauled around to the backhoe for use in backfilling the trench.



47 8/21/91 Centerville C site: double cleanout installed in existing 4" pipe above interceptor drain #1. There were no cleanouts in the existing pipe.



48 8/21/91 Centerville C site: looking west from interceptor drain #3 towards cleared and grubbed wetland cells. Note service hole #1 in place and initiation of excavation for bypass line.



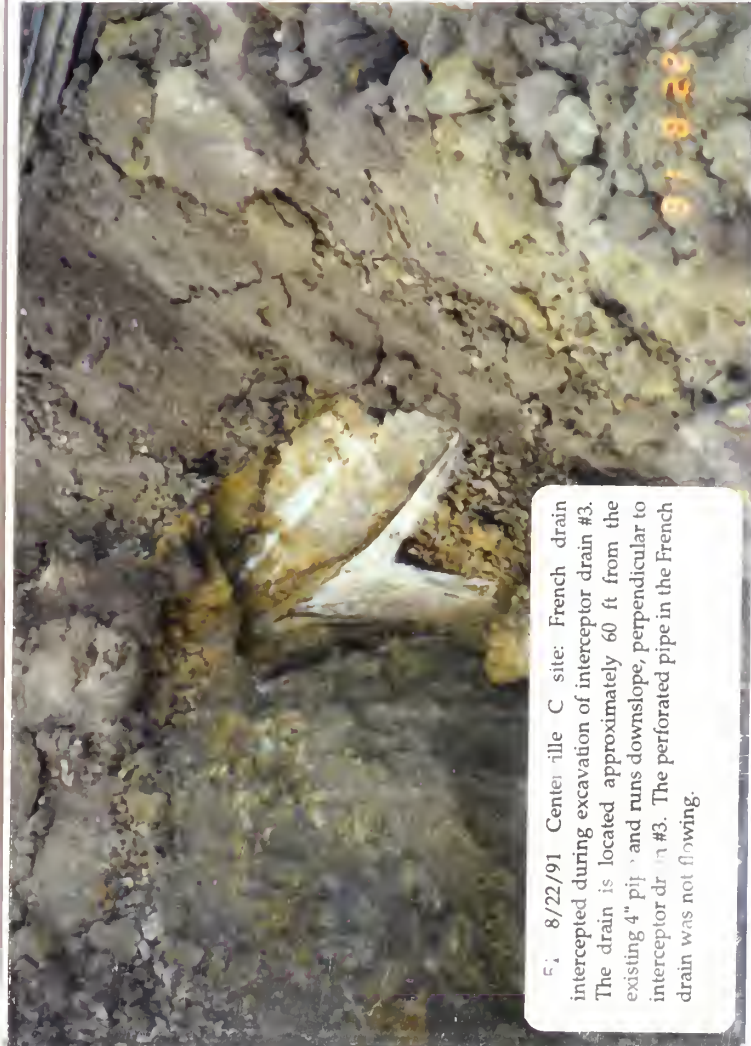




49 8/21/91 Centerville C site: form for bentonite seal in interceptor drain #3.



50 8/21/91 Centerville C site: view from west of highway (at mouth of Heal Coulee) looking east at Centerville C site.



51 8/22/91 Centerville C site: French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.



52 8/22/91 Centerville C site: French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.

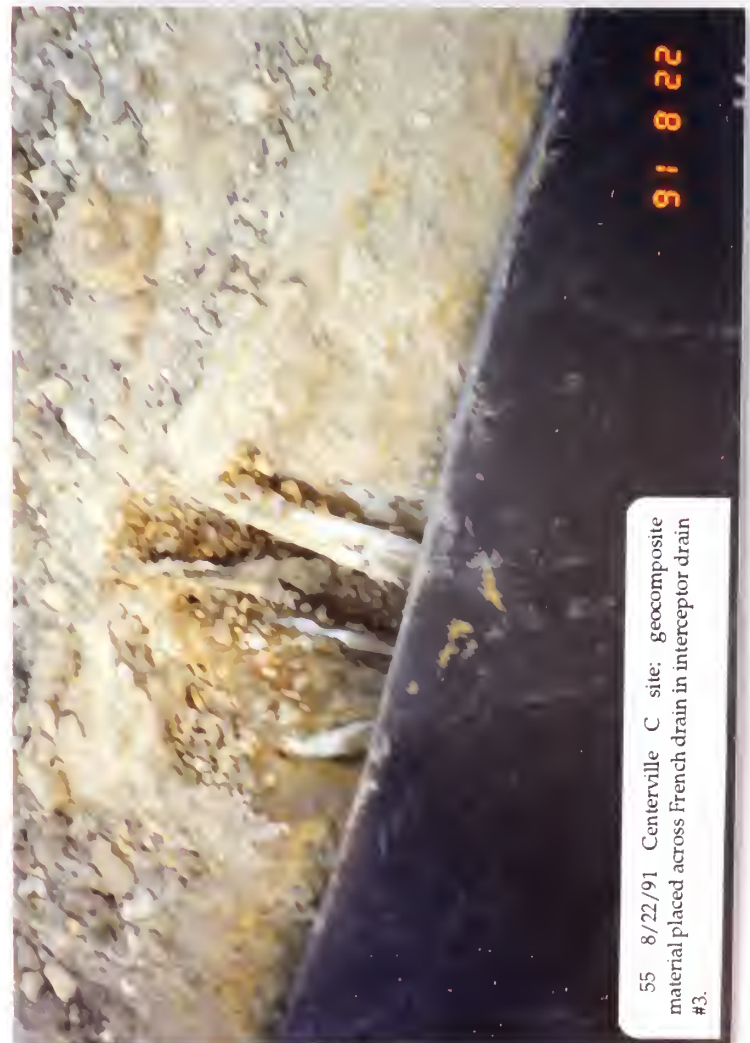




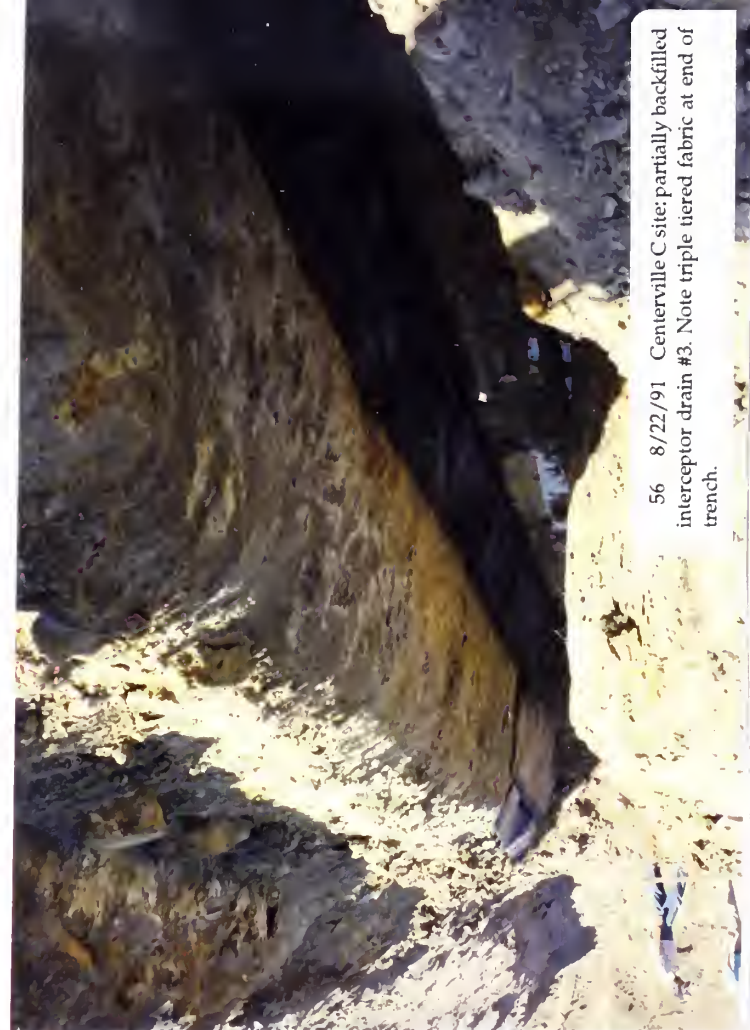
53 8/22/91 Centerville C site: French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.



54 8/22/91 Centerville C site: French drain intercepted during excavation of interceptor drain #3. The drain is located approximately 60 ft from the existing 4" pipe and runs downslope, perpendicular to interceptor drain #3. The perforated pipe in the French drain was not flowing.



55 8/22/91 Centerville C site: geocomposite material placed across French drain in interceptor drain #3.

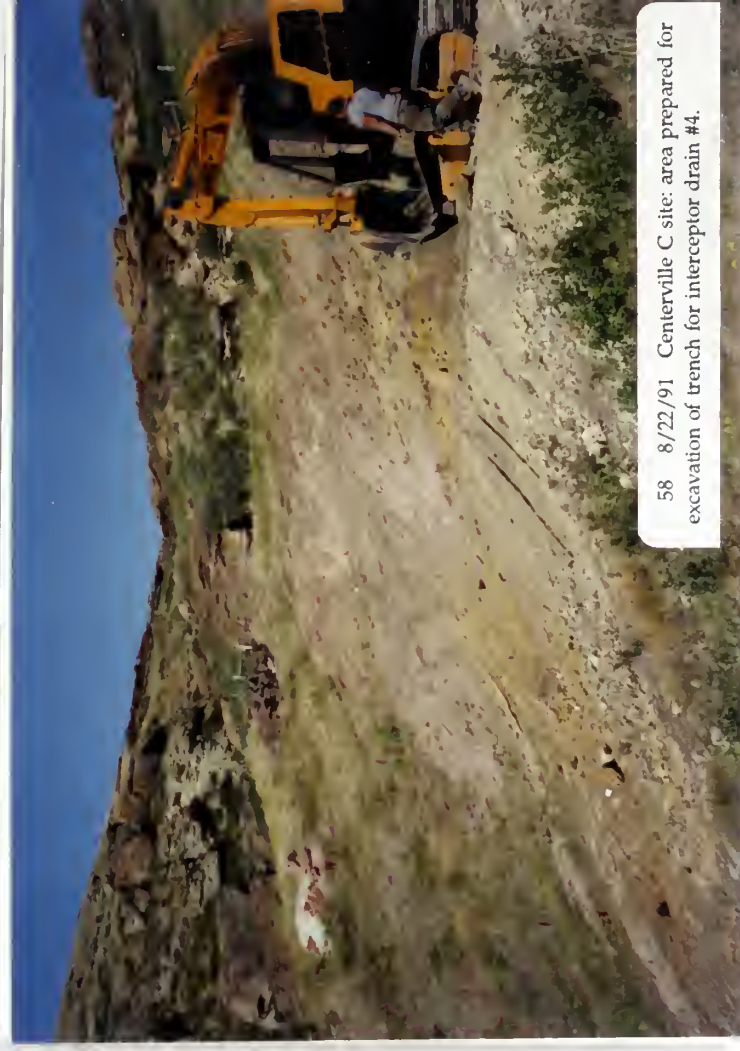


56 8/22/91 Centerville C site: partially backfilled interceptor drain #3. Note triple tiered fabric at end of trench.





57 8/22/91 Centerville C site: area prepared for excavation of trench for interceptor drain #4.



58 8/22/91 Centerville C site: area prepared for excavation of trench for interceptor drain #4.



59 8/27/91 Stockett S.E.: mobilization to site and access entry preparation.



60 8/29/91 Stockett S.E.: west slope excavation for interceptor drain and connection to existing 4" PVC.



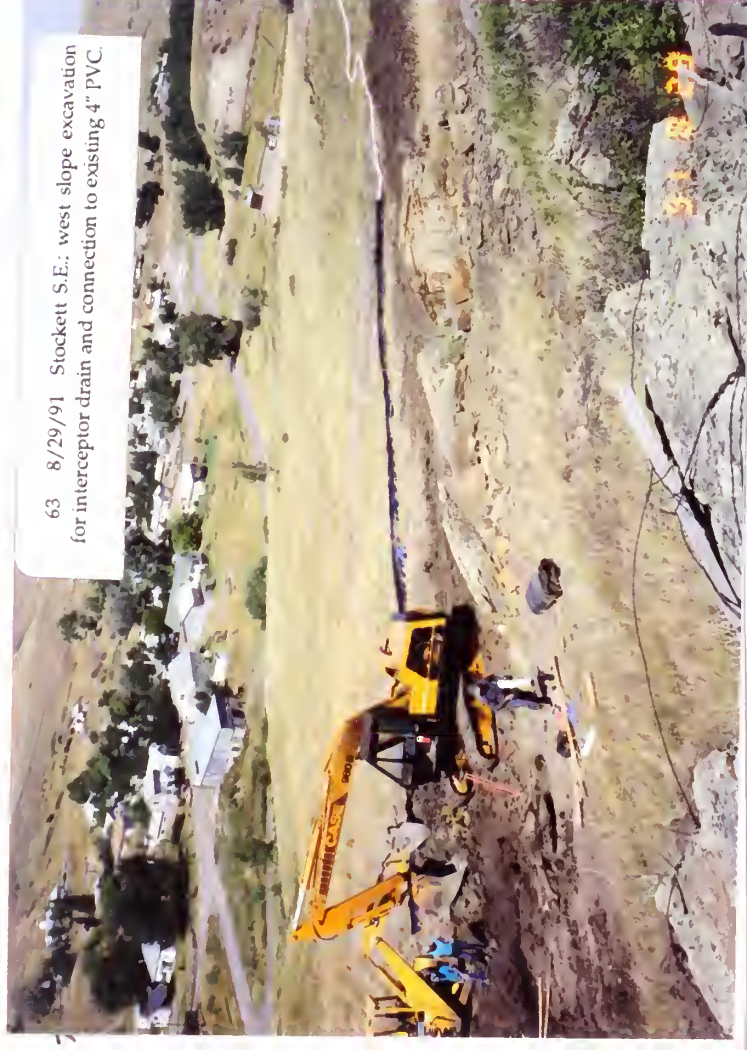
61 8/29/91 Stockett S.E.: west slope exposed  
previous trench drain near adit, repaired.



62 8/29/91 Stockett S.E.: west slope excavation  
for interceptor drain and connection to existing 4" PVC.



63 8/29/91 Stockett S.E.: west slope excavation  
for interceptor drain and connection to existing 4" PVC.



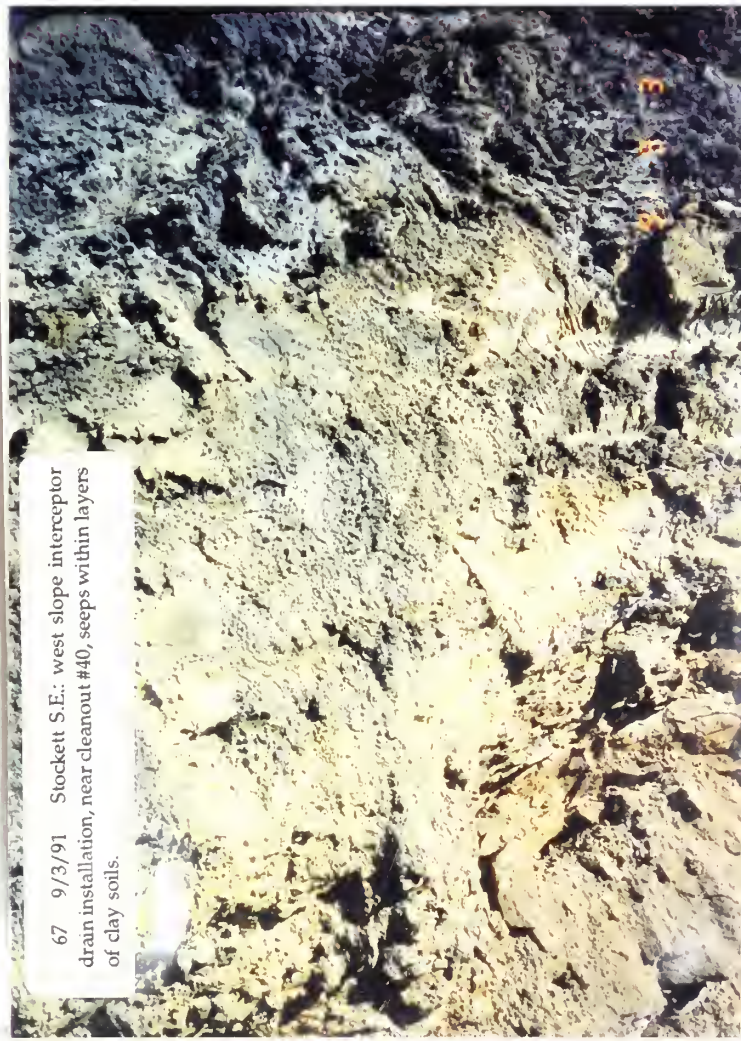
64 9/3/91 Stockett S.E.: west slope excavation  
for interceptor drain with Case 980, near cleanout #40.







65 9/3/91 Stockett S.E.: west slope interceptor drain installation and backfill with loader, near cleanout #40.



67 9/3/91 Stockett S.E.: west slope interceptor drain installation, near cleanout #40, seeps within layers of clay soils.



66 9/3/91 Stockett S.E.: west slope interceptor drain installation, near cleanout #40, checking grade. Note wire attached to board and geocomposite to hold in place.



68 9/10/91 Stockett S.E.: north west slope grading preparation for trenching of interceptor drain.





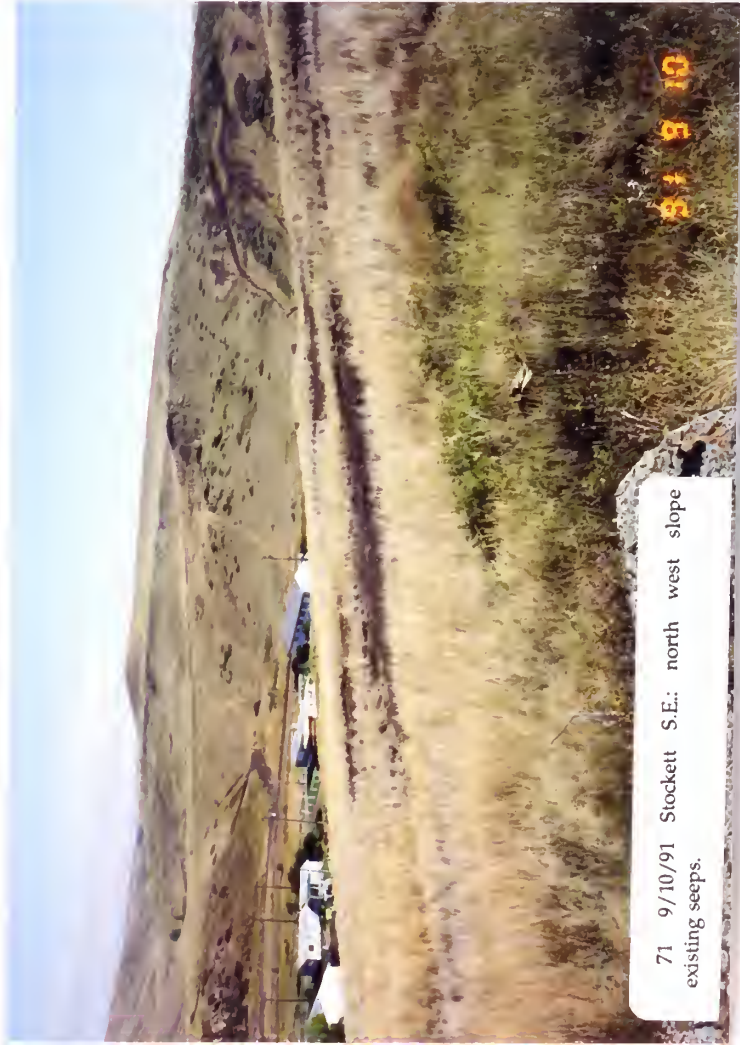
69 9/10/91 Stockett S.E.: north west slope  
grading preparation for trenching of interceptor drain.

91 9 10



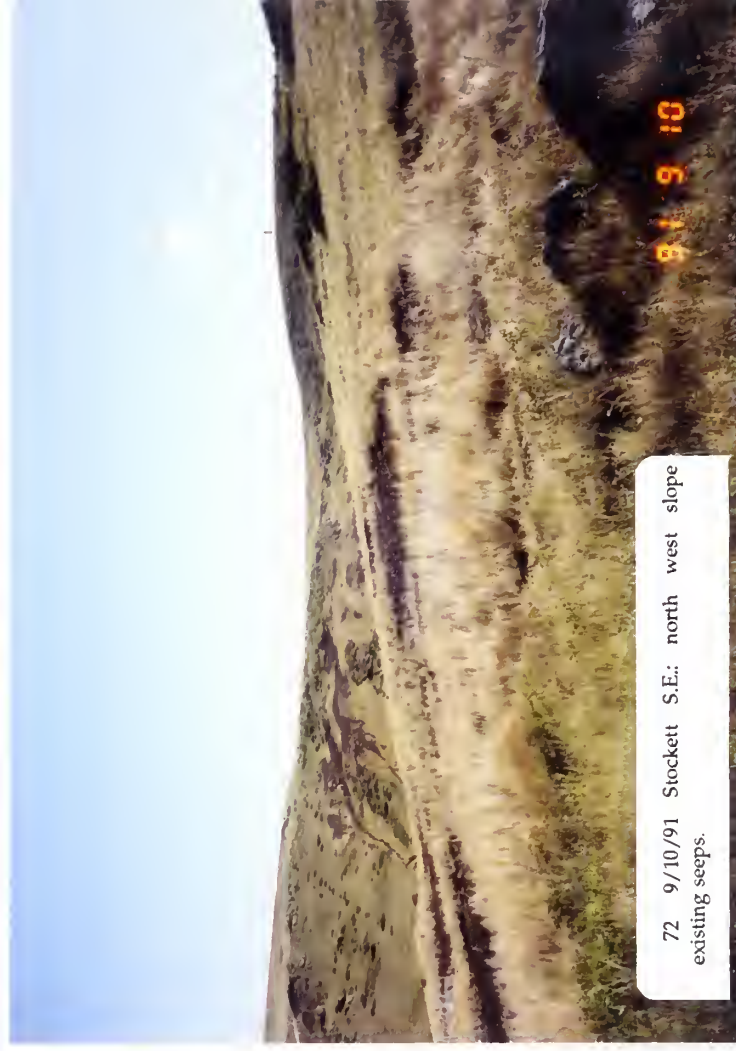
70 9/10/91 Stockett S.E.: north west slope  
existing seeps.

91 9 10



71 9/10/91 Stockett S.E.: north west slope  
existing seeps.

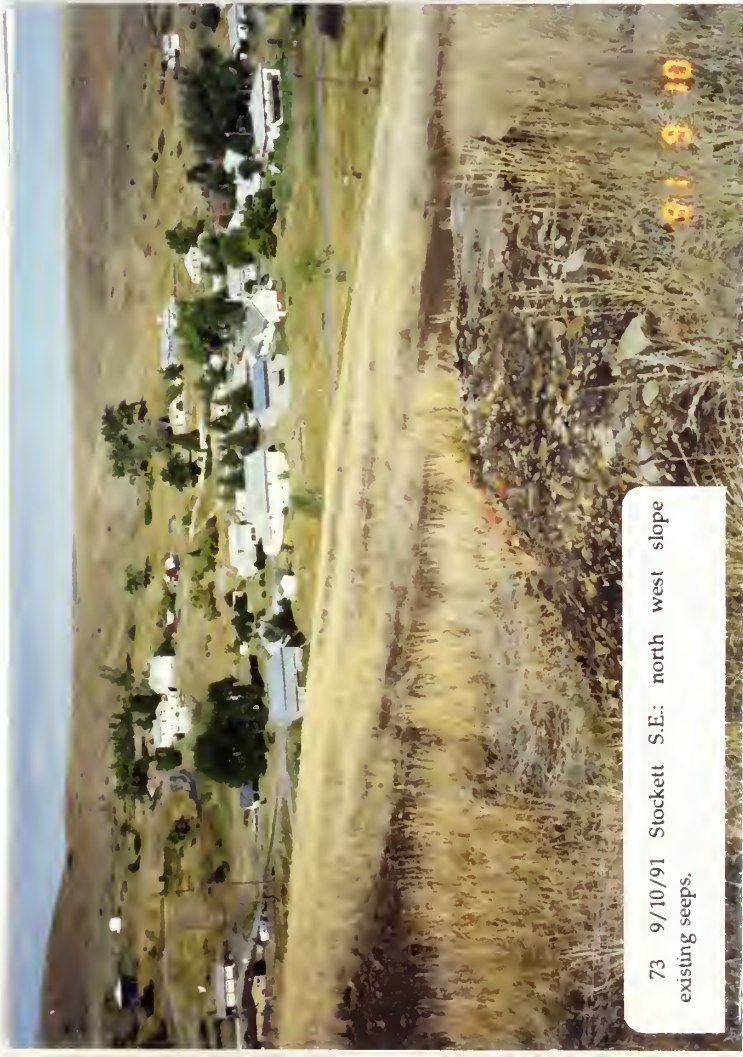
91 9 10



72 9/10/91 Stockett S.E.: north west slope  
existing seeps.

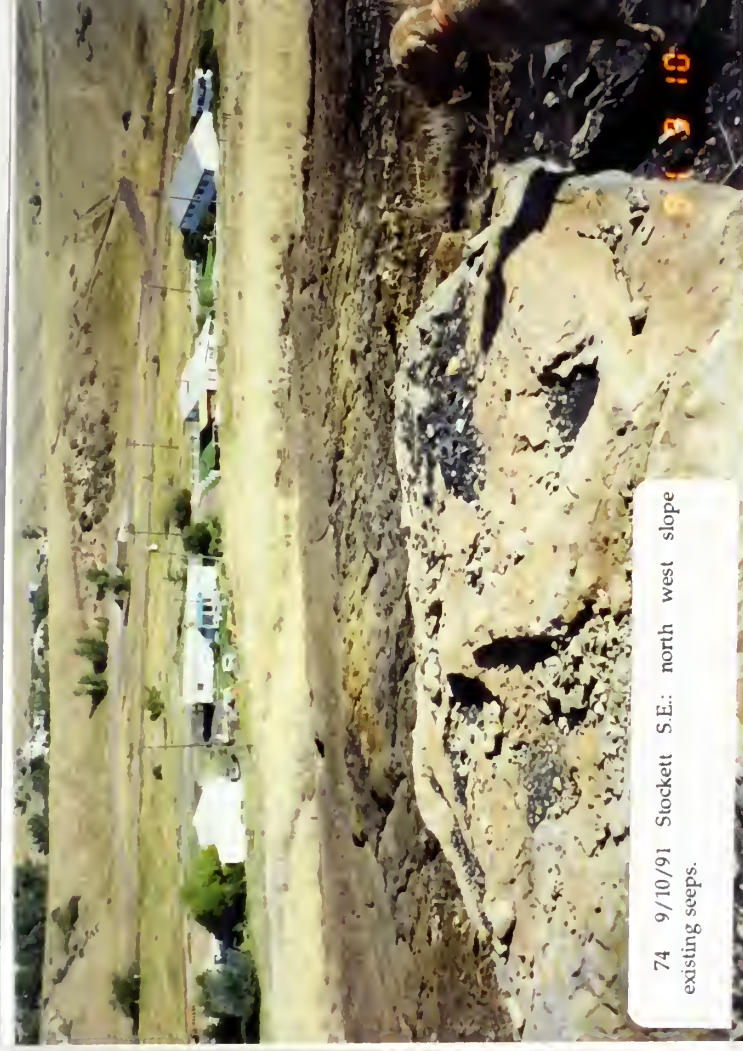
91 9 10





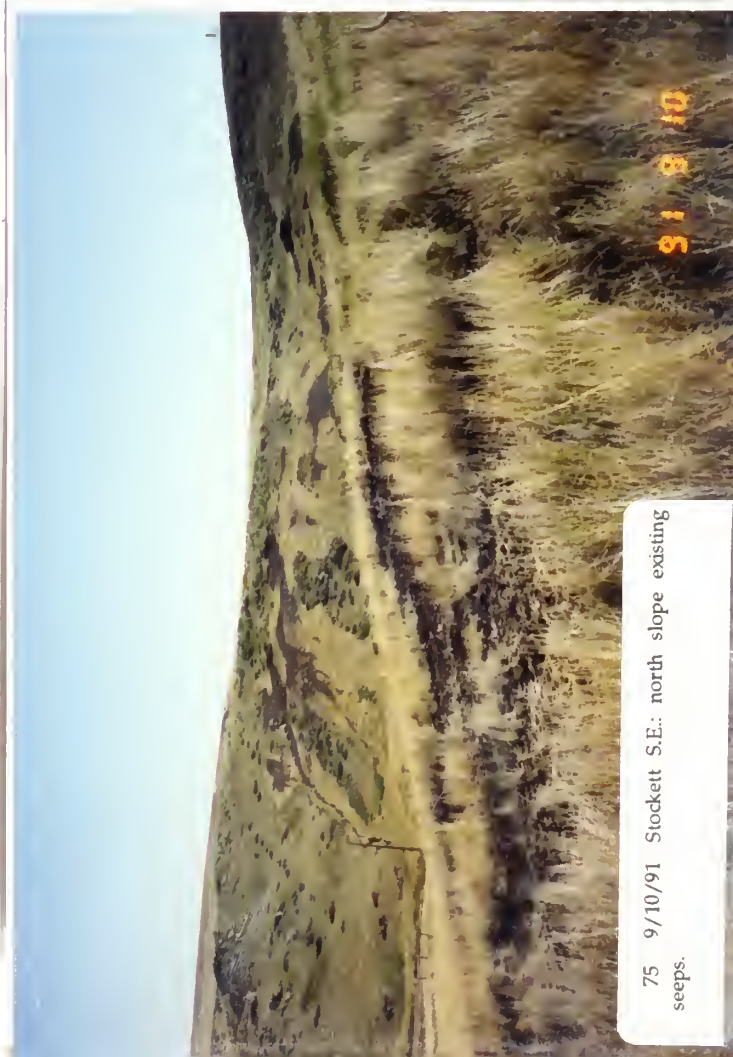
73 9/10/91 Stockett S.E.: north west slope existing seeps.

91 9 10



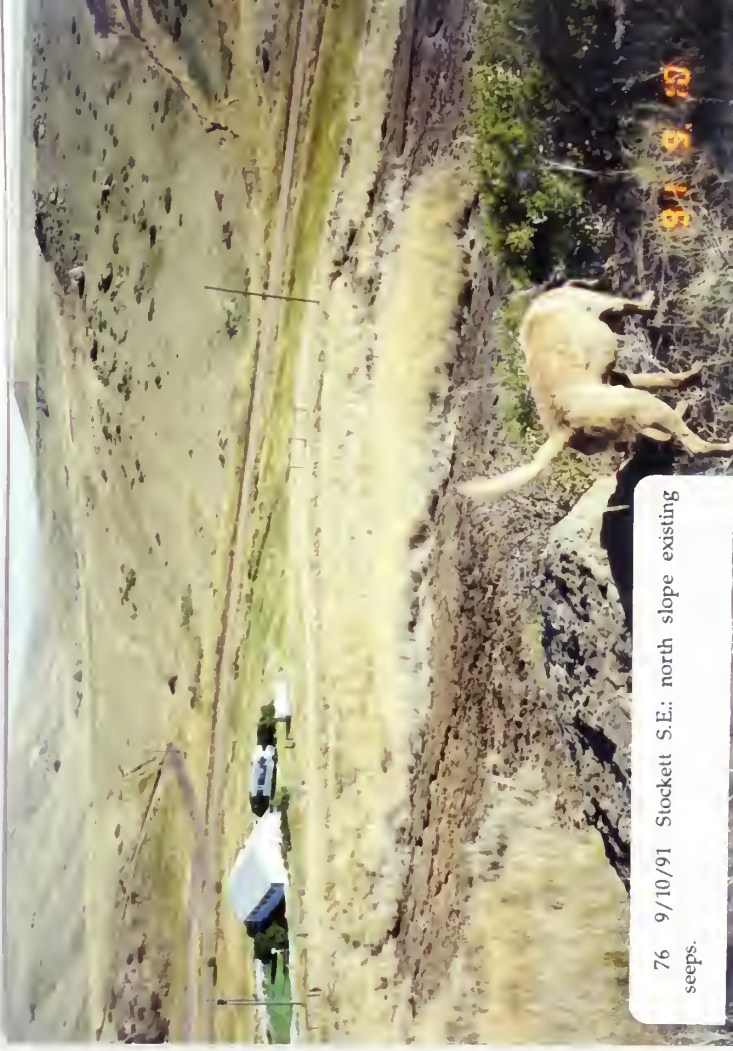
74 9/10/91 Stockett S.E.: north west slope existing seeps.

91 9 10



75 9/10/91 Stockett S.E.: north slope existing seeps.

91 9 10



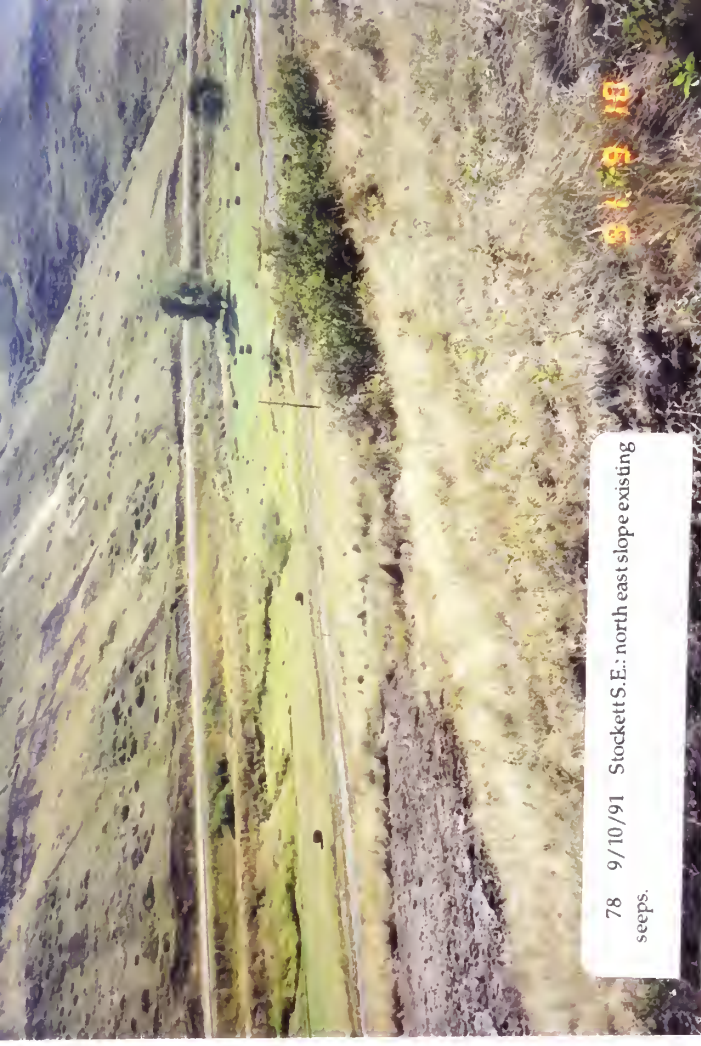
76 9/10/91 Stockett S.E.: north slope existing seeps.

91 9 10

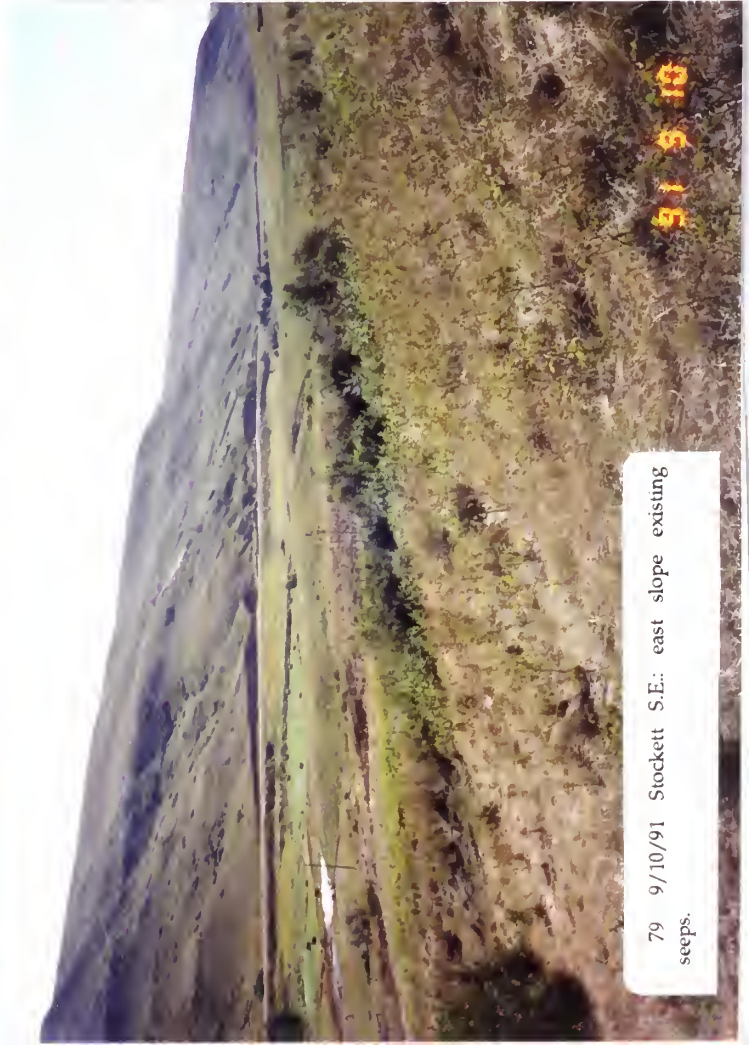




77 9/10/91 Stockett S.E.: north east slope existing  
seeps.



78 9/10/91 Stockett S.E.: north east slope existing  
seeps.

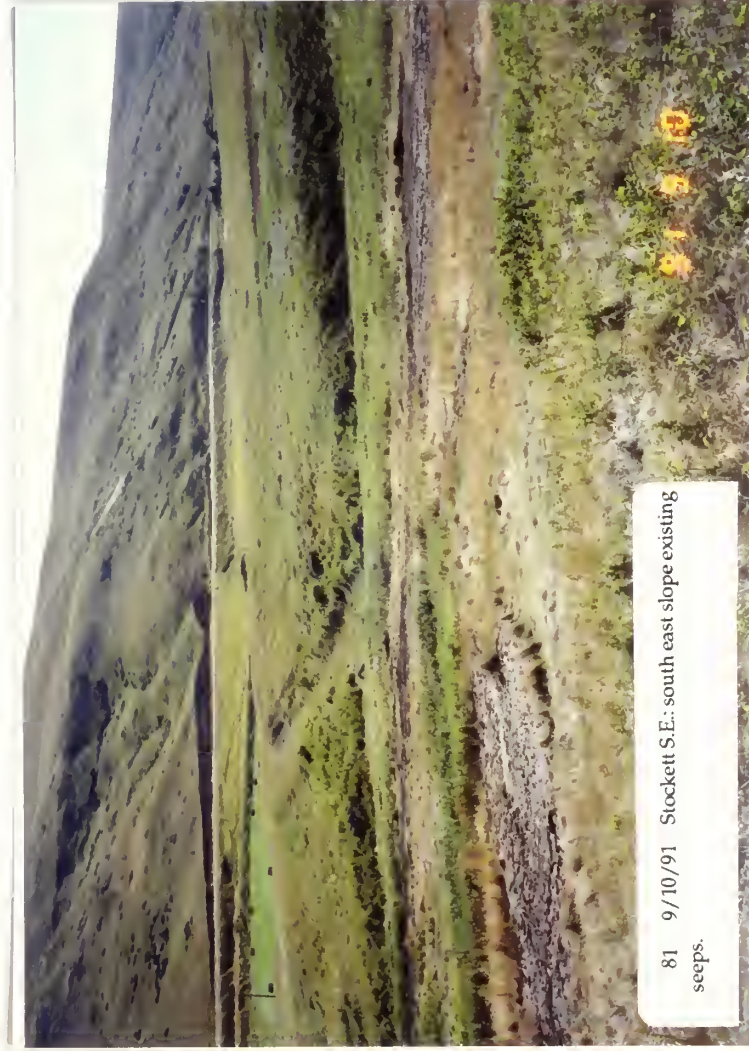


79 9/10/91 Stockett S.E.: east slope existing  
seeps.



80 9/10/91 Stockett S.E.: east slope existing  
seeps.





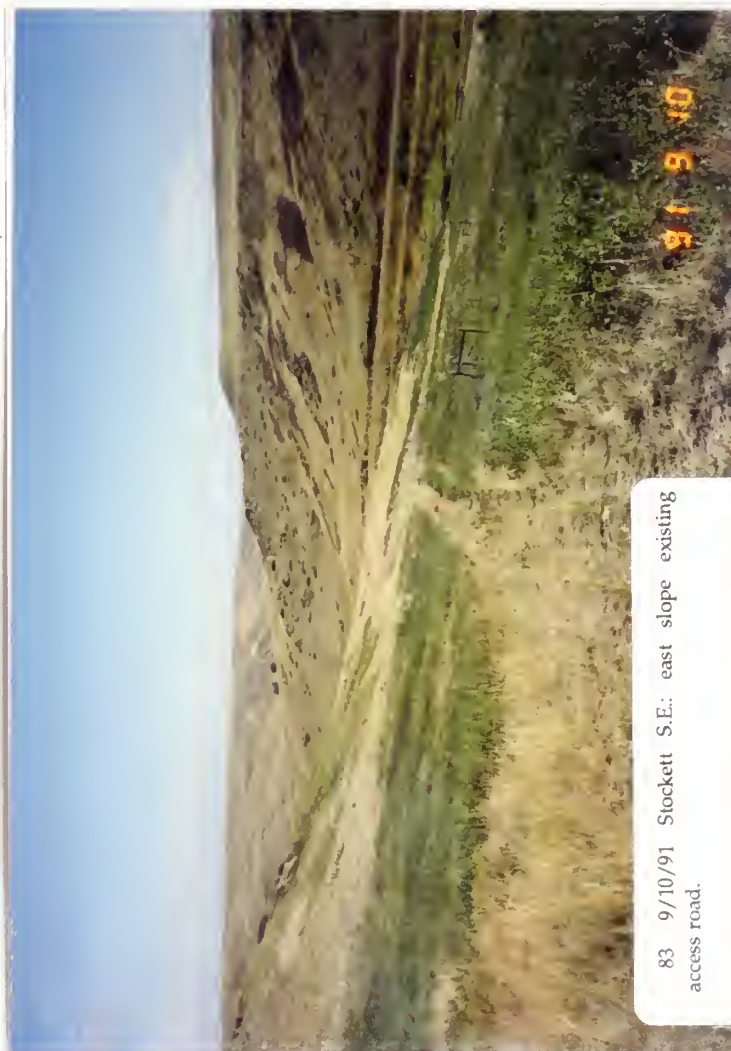
81 9/10/91 Stockett S.E.: south east slope existing  
seeps.

91 9 10



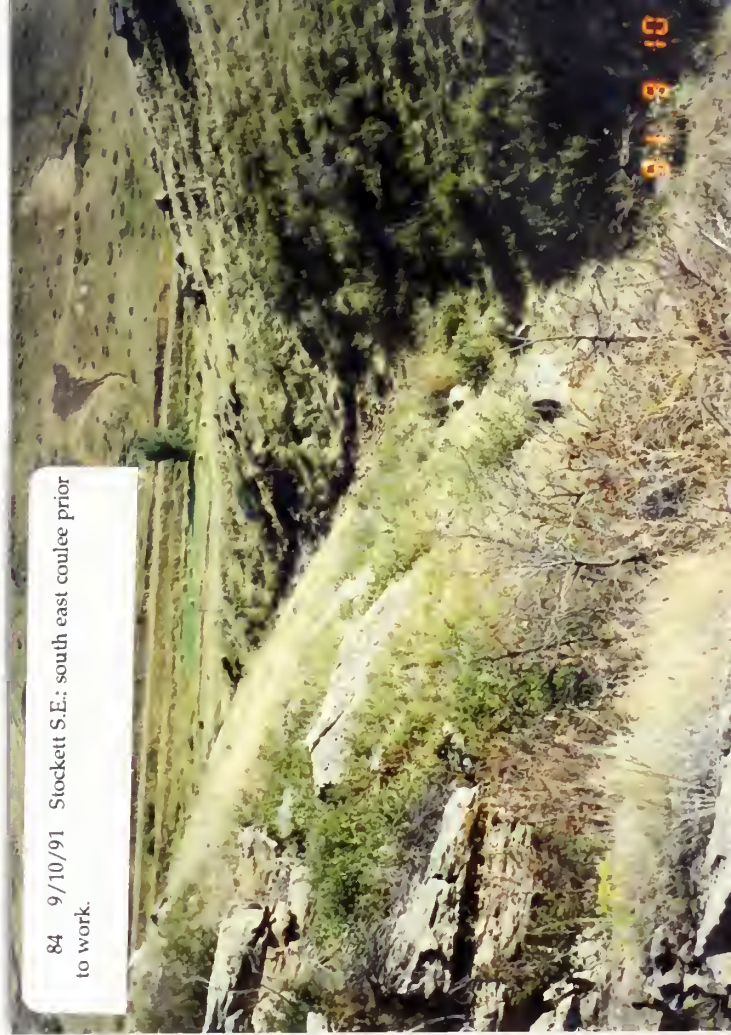
82 9/10/91 Stockett S.E.: south east slope existing  
seeps.

91 9 10



83 9/10/91 Stockett S.E.: east slope existing  
access road.

91 9 10



84 9/10/91 Stockett S.E.: south east coulee prior  
to work.

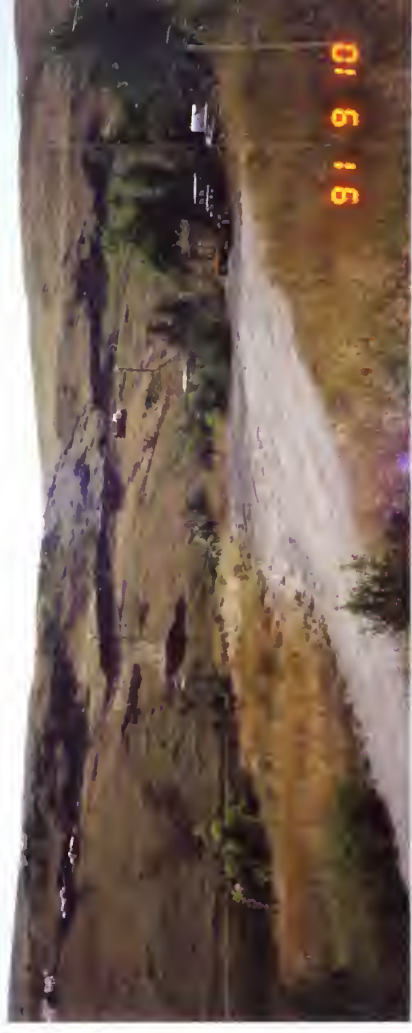
91 9 10



85 9/10/91 Stockett S.E.: south end of site looking north



86 9/10/91 Stockett S.E.: overview of south west end of site.



87 9/10/91 Stockett S.E.: overview of north west end of site.



88 9/10/91 Stockett S.E.: overview of south west end of site.





89 9/10/91 Stockett S.E.: overview of north west end of site.



90 9/10/91 Stockett S.E.: overview of north west end of site.



91 9/10/91 Stockett S.E.: overview of north slope existing seeps.



92 9/10/91 Stockett S.E.: overview of north west slope existing seeps.





93 9/10/91 Stockett S.E.: overview of north west slope existing seeps.



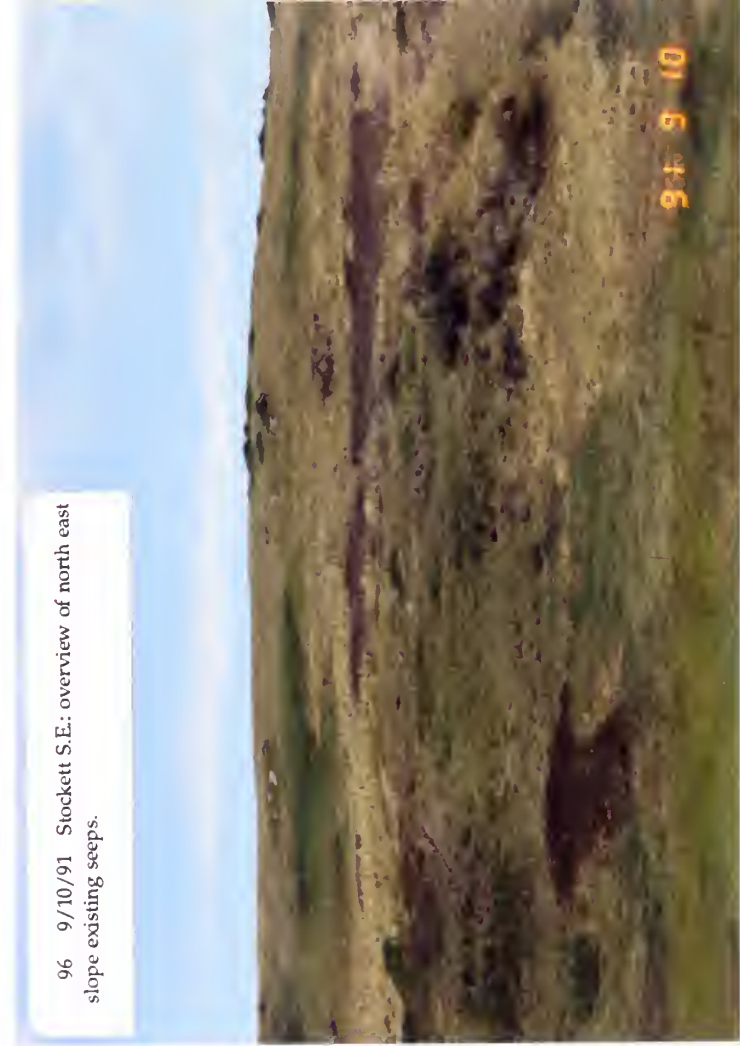
94 9/10/91 Stockett S.E.: overview of north east slope existing seeps.



95 9/10/91 Stockett S.E.: overview of north east slope existing seeps.



96 9/10/91 Stockett S.E.: overview of north east slope existing seeps.





97 9/10/91 Stockett S.E.: overview of south east slope existing seeps.



98 9/10/91 Stockett S.E.: overview of south east end of site and south east coulee.



99 9/11/91 Coversoil Borrow area: test holes.



100 9/11/91 Coversoil Borrow area: test holes.





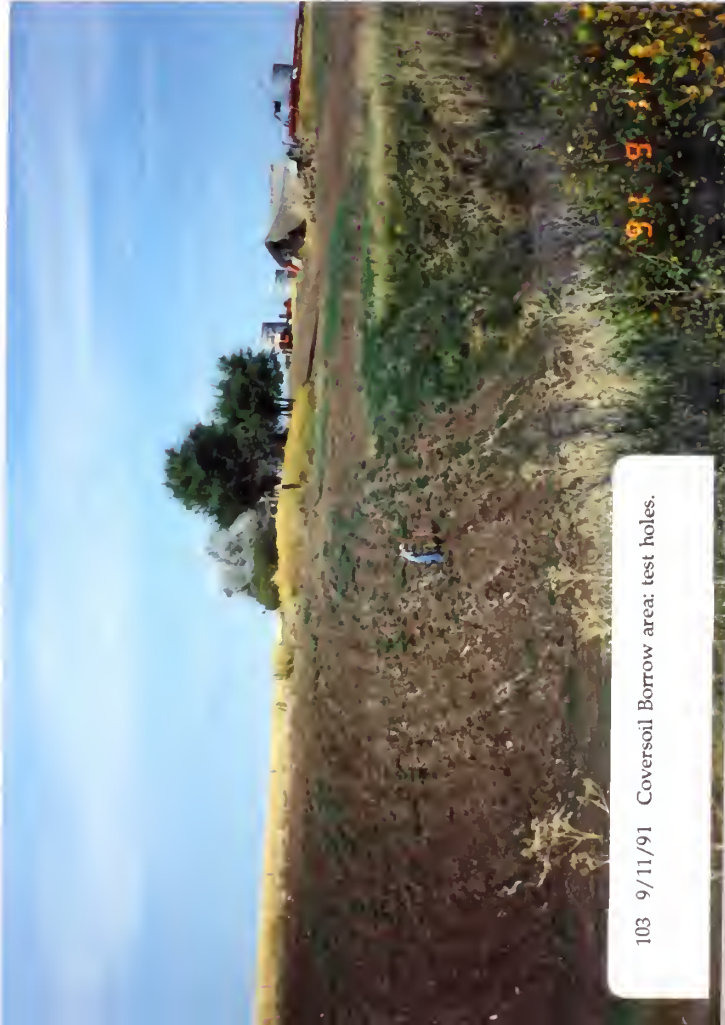
102 9/11/91 Coversoil Borrow area: test holes.



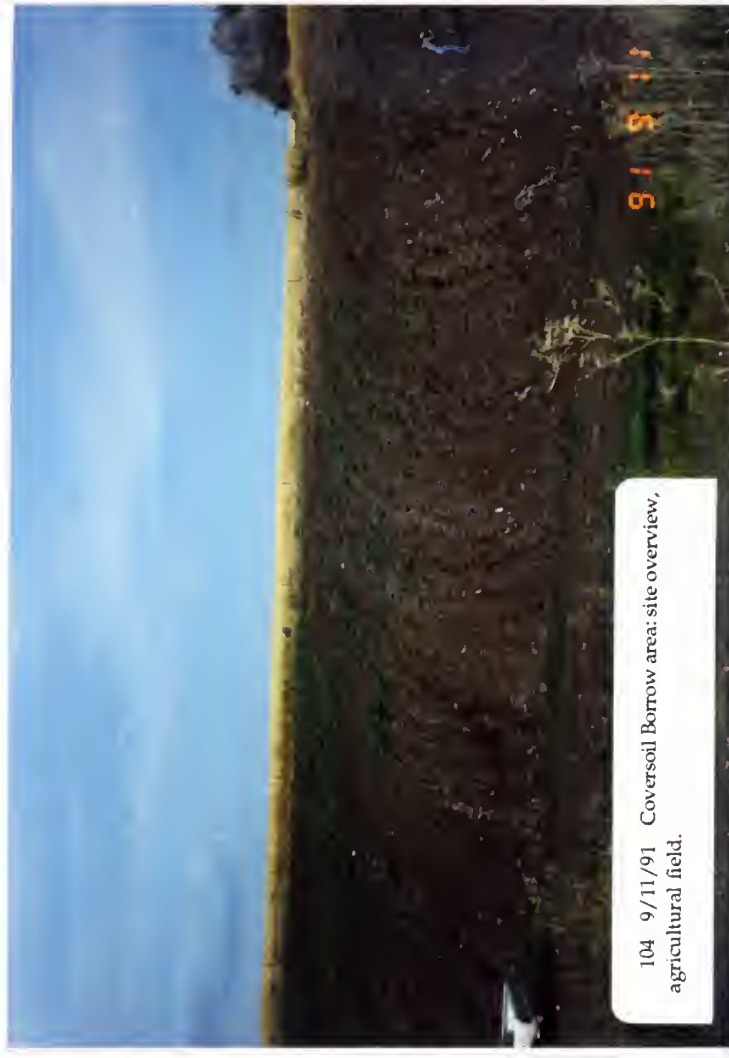
101 9/11/91 Coversoil Borrow area: test holes.



103 9/11/91 Coversoil Borrow area: test holes.



104 9/11/91 Coversoil Borrow area: site overview, agricultural field.

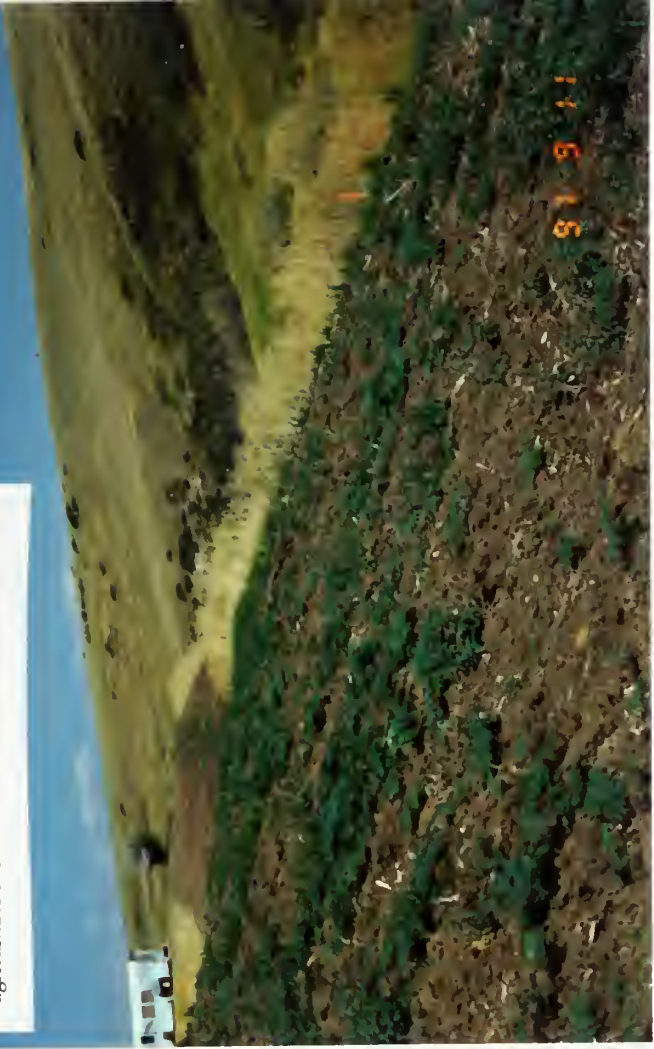




105 9/11/91 Coversoil Borrow area: site overview,  
agricultural field.



106 9/11/91 Coversoil Borrow area: site overview,  
agricultural field.



107 9/11/91 Coversoil Borrow area: site overview,  
agricultural field.



108 9/11/91 Coversoil Borrow area: site overview,  
agricultural field.





109 9/11/91 Coversoil borrow area: site overview, agricultural field.



110 9/17/91 Stockett S.E.: south east coulee trench for interceptor drain.



111 9/17/91 Stockett S.E.: south east coulee trench for interceptor drain.



112 9/17/91 Stockett S.E.: south east coulee trench for interceptor drain.





113 9/17/91 Stockett S.E.: at south east coulee looking north, grade preparation for excavation. of interceptor drain.



91 9 17

115 9/17/91 Stockett S.E.: SW service hole, to date installation of valves and couplings.

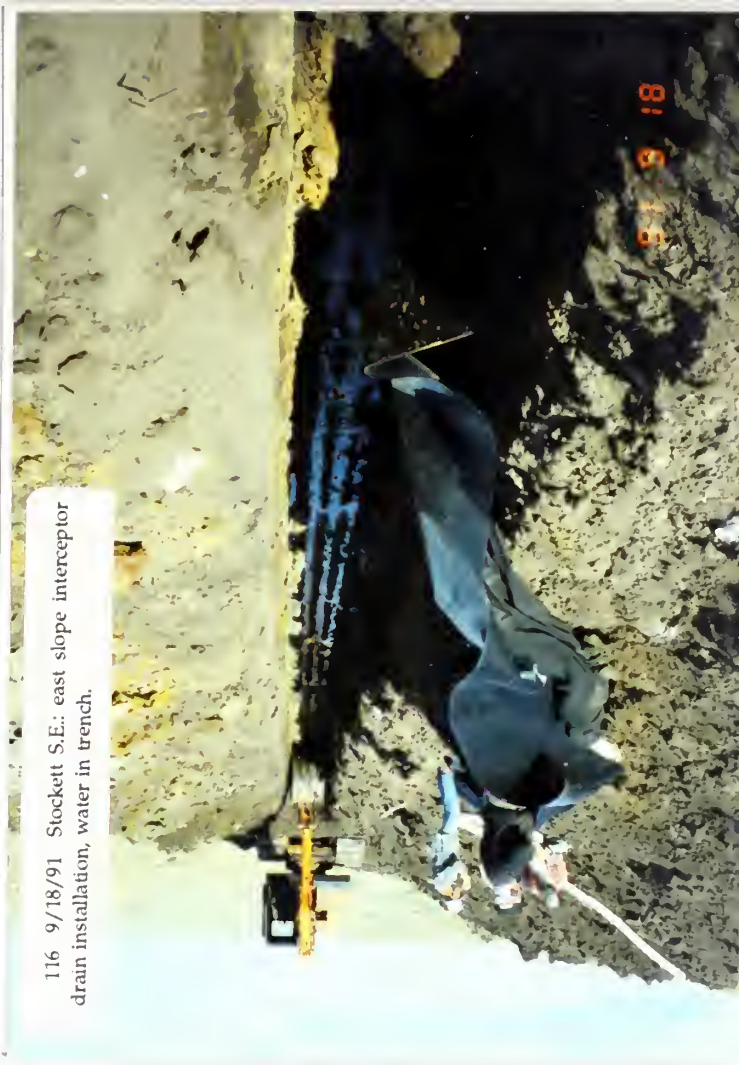


91 9 17



114 9/17/91 Stockett S.E.: installing SW service hole with crane.

116 9/18/91 Stockett S.E.: east slope interceptor drain installation, water in trench.



91 9 18

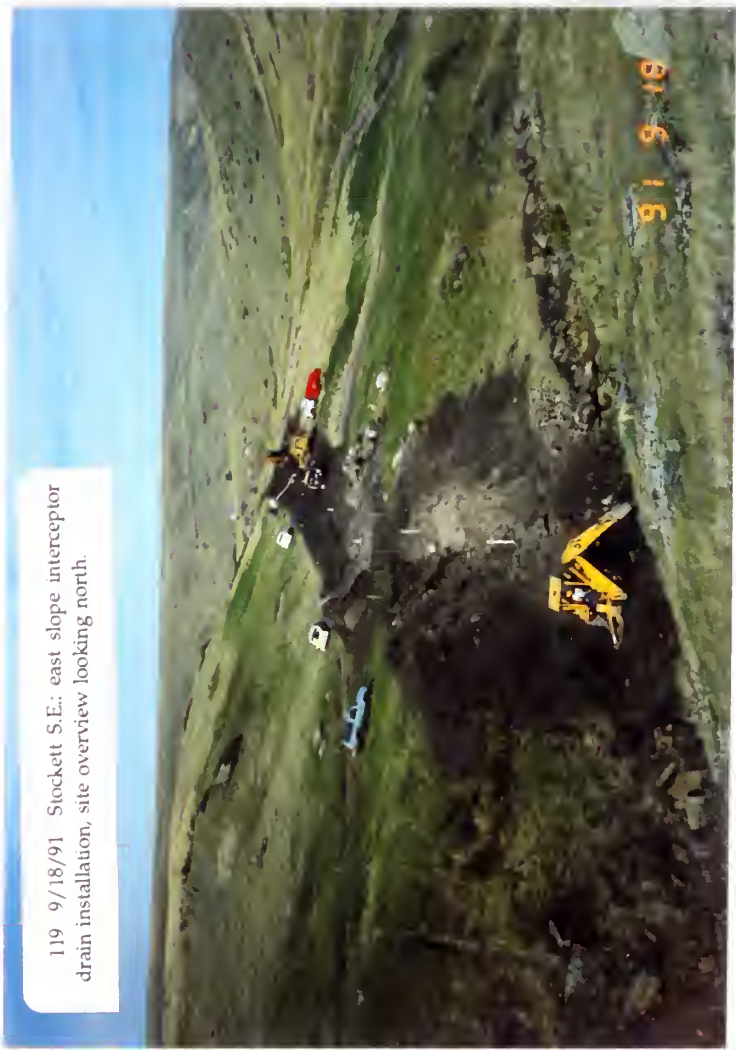




117 9/18/91 Stockett S.E.: east slope interceptor drain installation, water in trench.



118 9/18/91 Stockett S.E.: east slope interceptor drain installation, water in trench.



119 9/18/91 Stockett S.E.: east slope interceptor drain installation, site overview looking north.



120 9/18/91 Stockett S.E.: east slope interceptor drain installation, site overview looking north.



121 9/19/91 Stockett S.E.: west slope site overview.



122 9/24/91 Stockett S.E.: south east coulee, view from below, landowner fencing in foreground.



123 9/24/91 Stockett S.E.: east slope view from below.



124 9/24/91 Stockett S.E.: east slope view from below.





125 9/24/91 Stockett S.E.: north east slope view from below.



126 9/24/91 Stockett S.E.: north slope view from below.



127 9/24/91 Stockett S.E.: west slope overview.

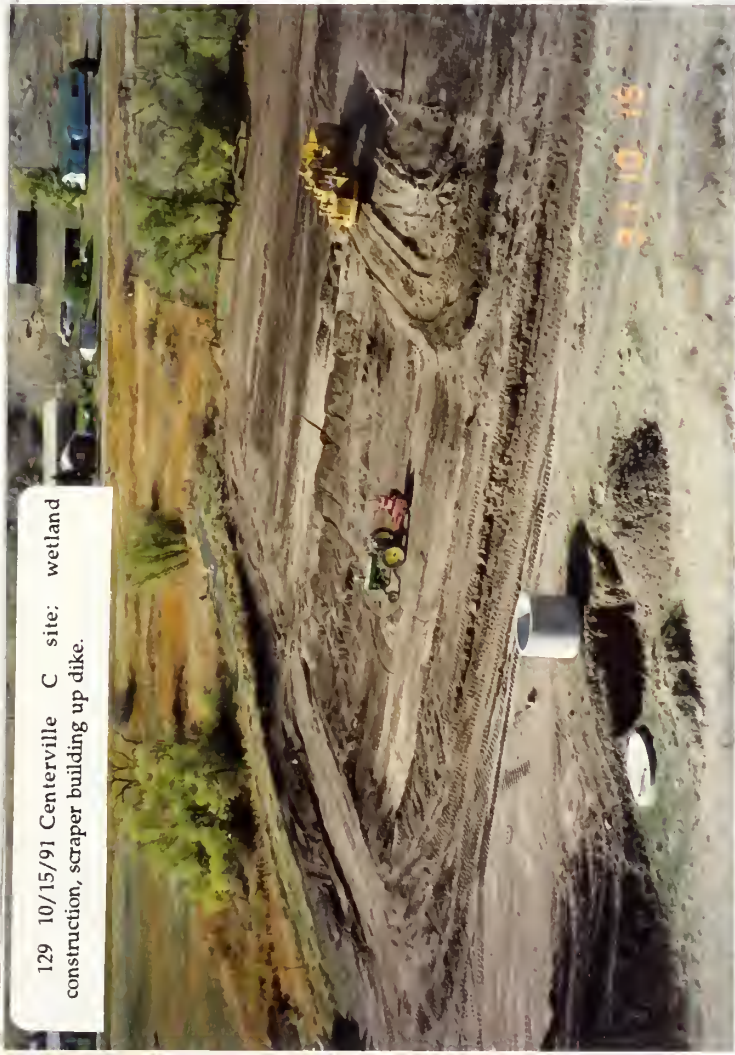


128 9/25/91 Centerville Csite: applying bentonite to soil for preparation of premix soil/bentonite seal used for ends of interceptor drains and limestone trenches.





129 10/15/91 Centerville C site: wetland construction, scraper building up dike.



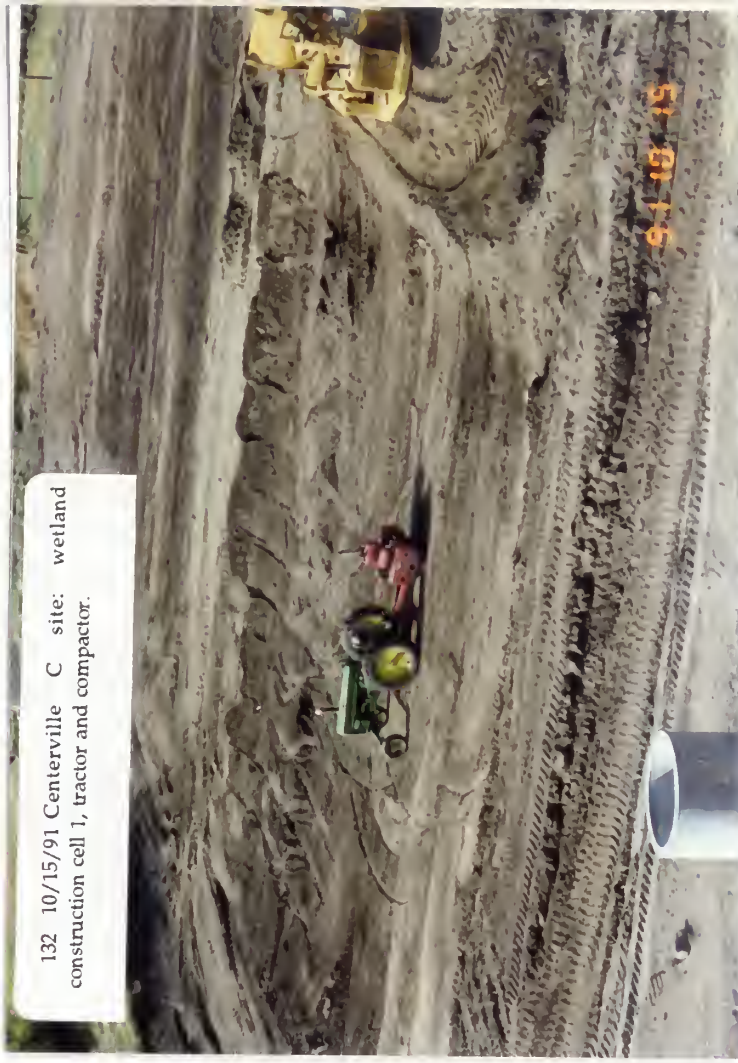
130 10/15/91 Centerville C site: wetland construction, scraper building up dike.



131 10/15/91 Centerville C site: wetland construction, grader working dike, D7 helping borrow fill material on north slope.



132 10/15/91 Centerville C site: wetland construction cell 1, tractor and compactor.





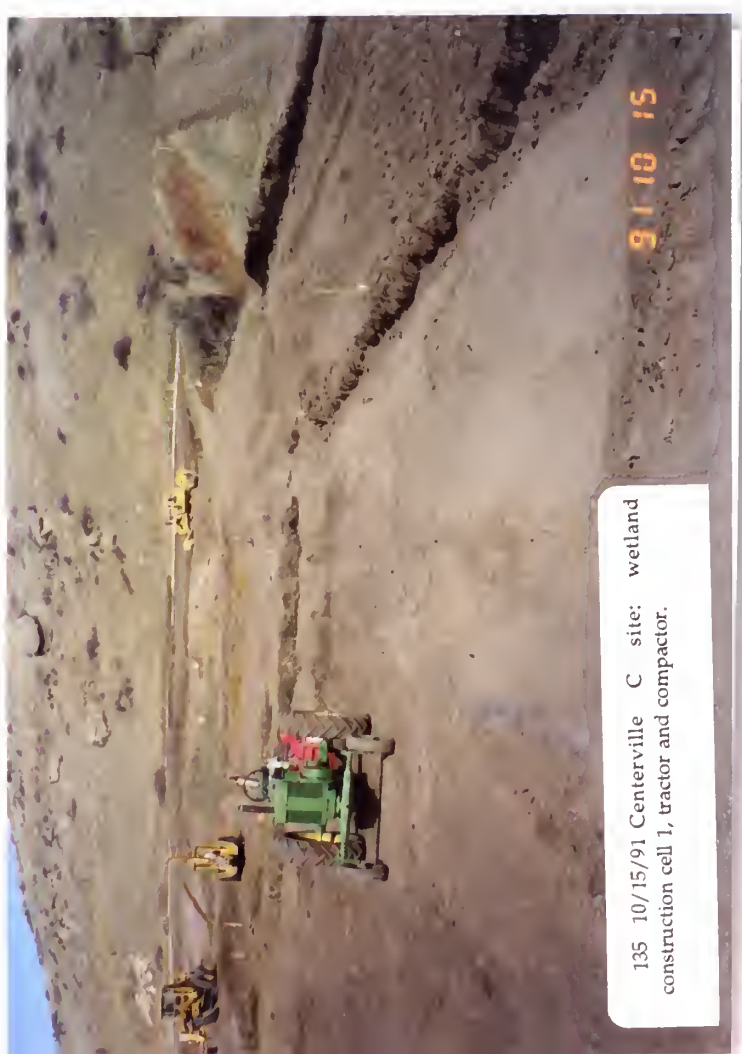
133 10/15/91 Centerville C site: wetland construction, grader working dike of cells 2 & 3, backhoe helping;



134 10/15/91 Centerville C site: D7 helping borrow fill material on north slope.



135 10/15/91 Centerville C site: wetland construction cell 1, tractor and compactor.



136 10/15/91 Centerville C site: wetland construction, grader working dike of cells 2 & 3.







137 10/15/91 Centerville C site: wetland construction, grader working dike of cells 2 & 3, freshly watered cell 2 for dust control.



138 11/13/91 Centerville C site: 1 of 3 panorama, wetland construction north end, loader moving coversoil.

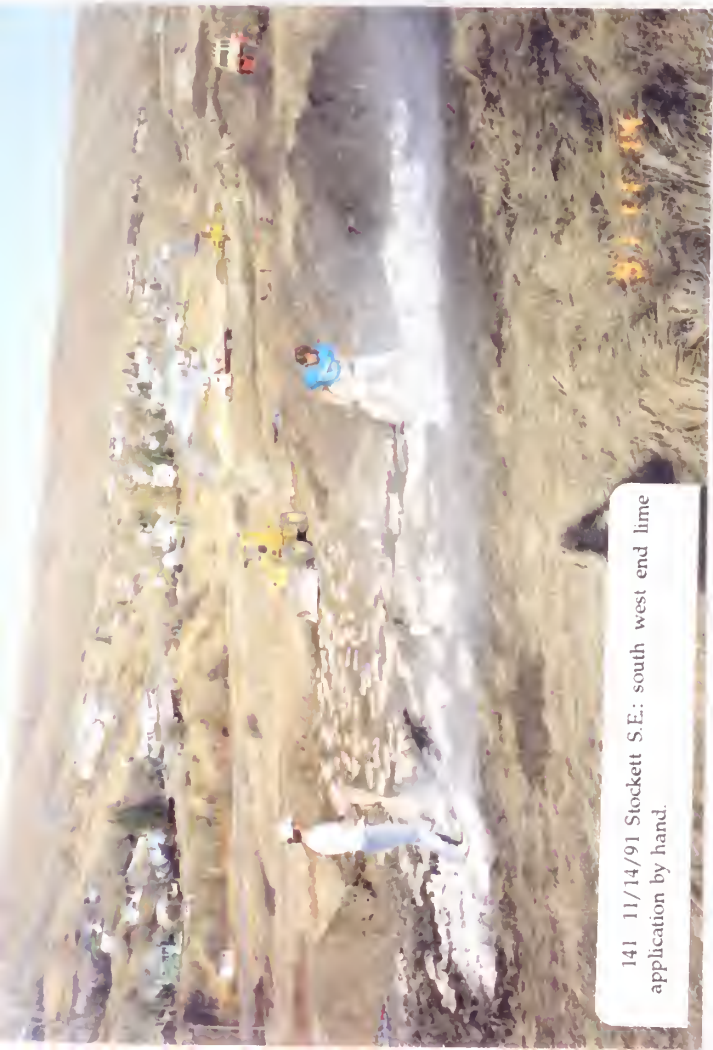


139 11/13/91 Centerville C site: 2 of 3 panorama, wetland construction cells 2 & 3, fine grading with JD 555, motorgrader and D7. Case 980 excavating for pipe from limestone trench to service hole



140 11/13/91 Centerville C site: 3 of 3 panorama, wetland construction cells 1 & 2.





141 11/14/91 Stockett S.E.: south west end lime application by hand.



142 11/20/91 Centerville C site: upper area north of existing 4" PVC line, trench excavation for additional interceptor drain, little indication of seepage.



143 11/20/91 Centerville C site: cell 1 hand application and incorporation of bentonite with tiller attachment to tractor.



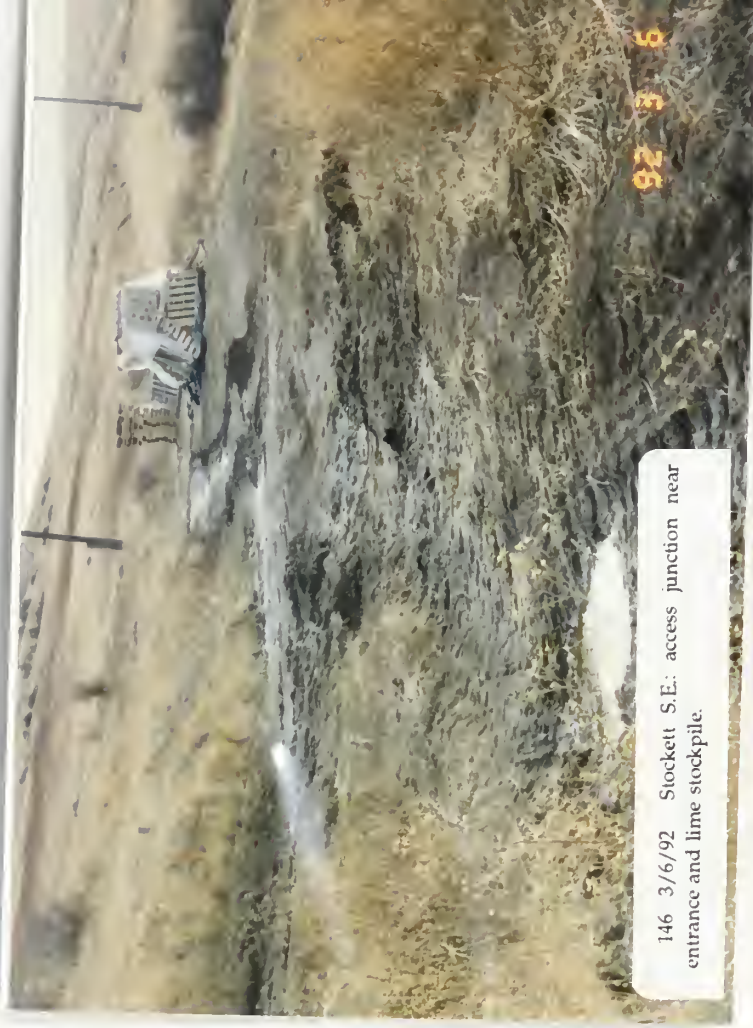
144 11/20/91 Centerville C site: cell 1 bentonite incorporation, cells 2 & 3 placement of weir outlet structures.



145 11/20/91 Centerville C site: upper area north of existing 4"PVC line, trench excavation for additional interceptor drain, Case 980 excavator.



146 3/6/92 Stockett S.E.: access junction near entrance and lime stockpile.



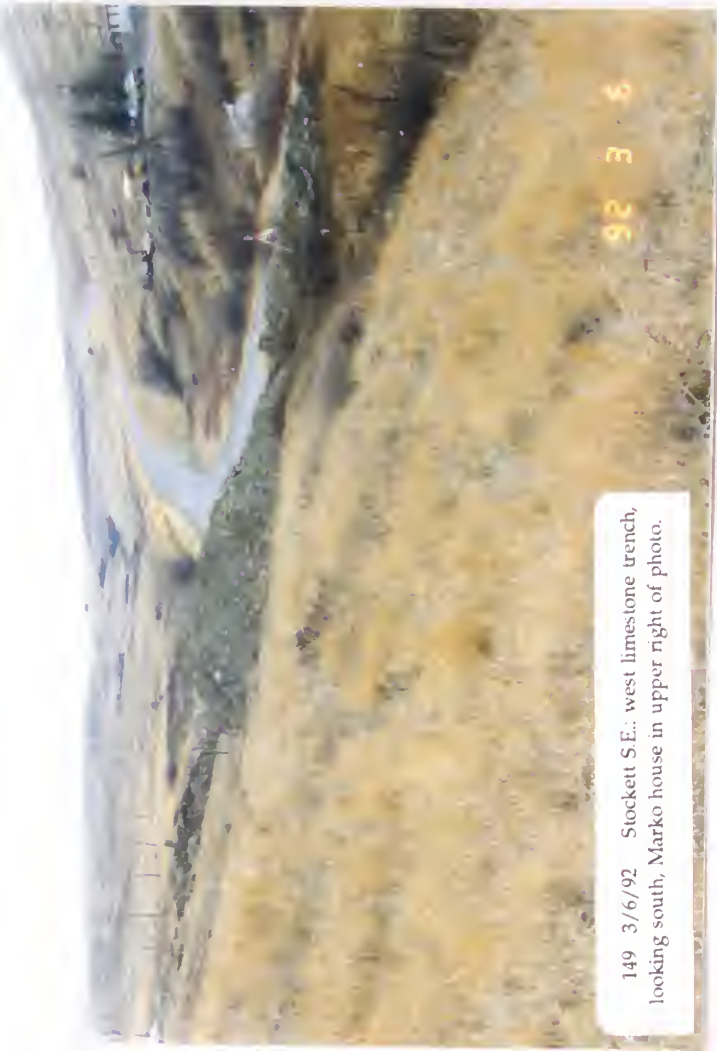
147 3/6/92 Stockett S.E.: outlet of SW pipe in road ditch.



148 3/6/92 Stockett S.E.: west limestone trench with survey control point on left side of photo.



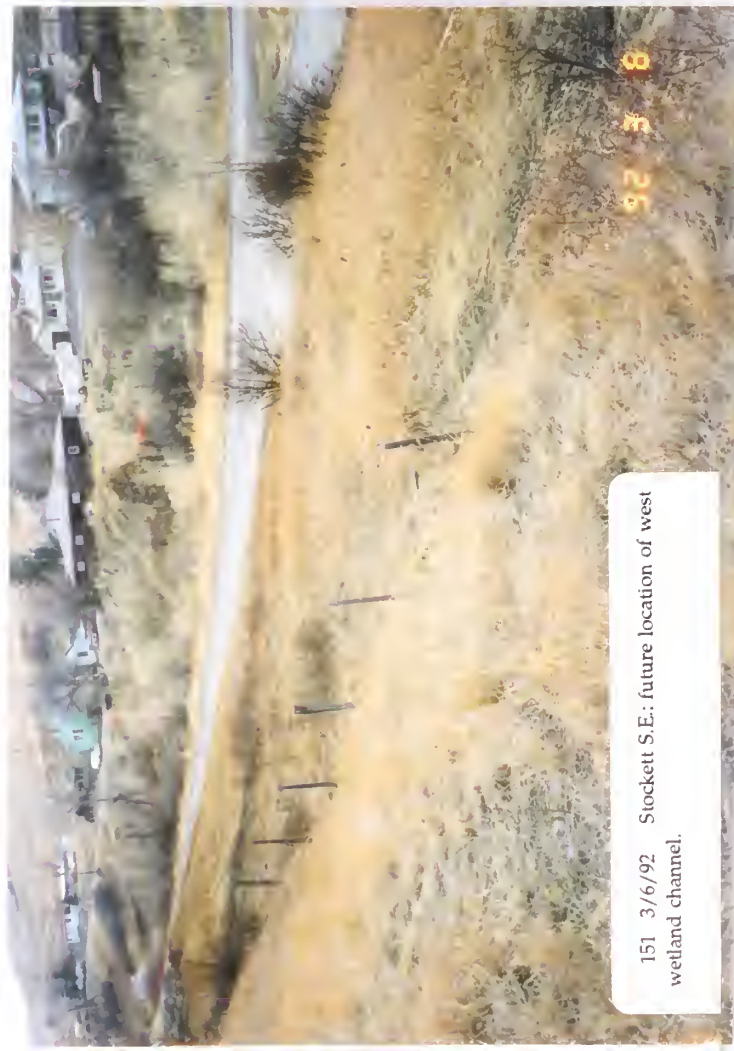




149 3/6/92 Stockett S.E.: west limestone trench, looking south, Marko house in upper right of photo.



150 3/6/92 Stockett S.E.: future location of west wetland channel.



151 3/6/92 Stockett S.E.: future location of west wetland channel.



152 3/6/92 Stockett S.E.: future location of west wetland channel.





153 3/6/92 Stockett S.E.: future location of west wetland channel and junction with north wetland channel.



154 3/6/92 Stockett S.E.: future location of west wetland channel outlet.

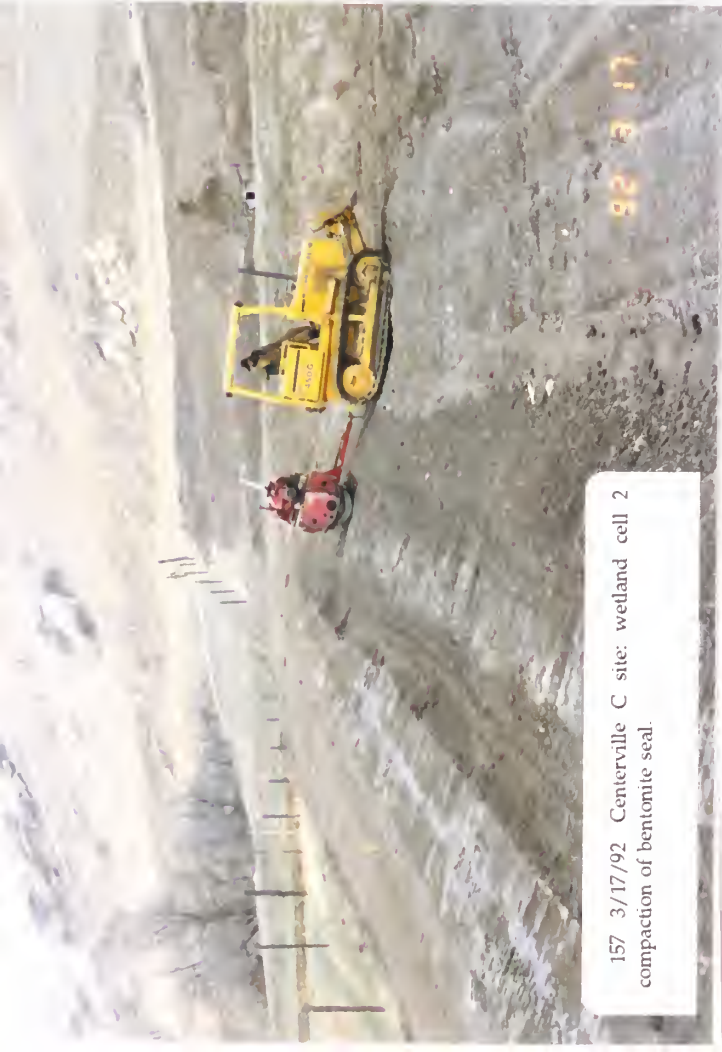


155 3/6/92 Stockett S.E.: slope below future location of west wetland channel.



156 3/6/92 Stockett S.E.: future location of west wetland channel.

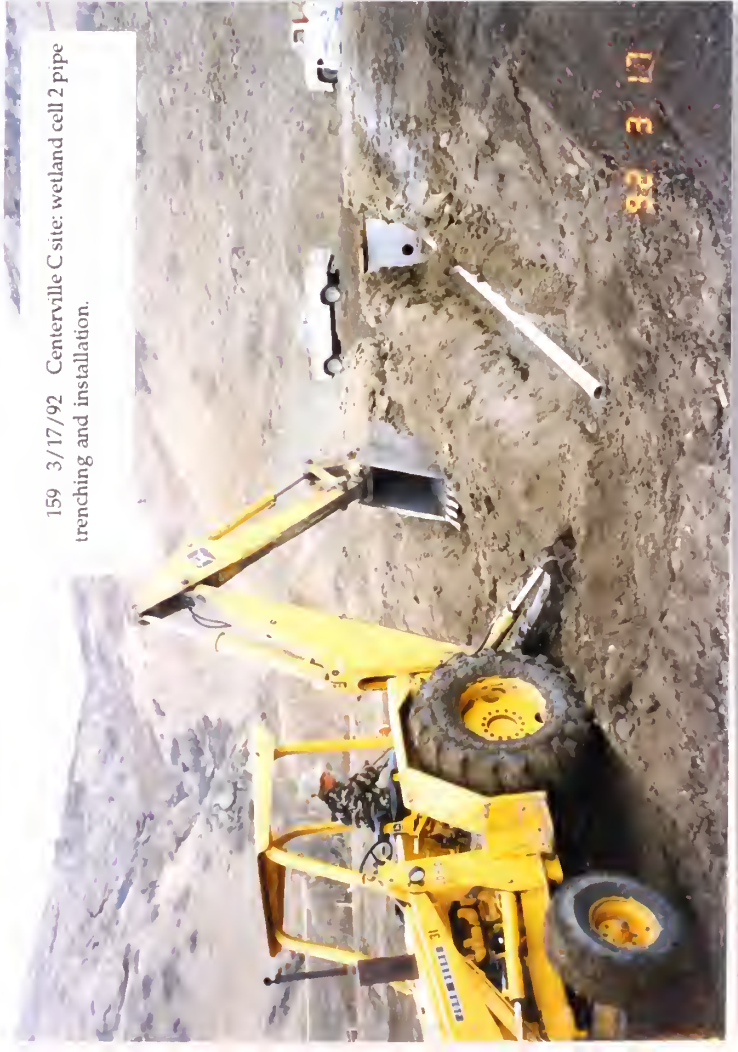




157 3/17/92 Centerville C site: wetland cell 2  
compaction of bentonite seal.



158 3/17/92 Centerville C site: wetland cell 2  
compaction of bentonite seal, closeup shows slope  
hump.



159 3/17/92 Centerville C site: wetland cell 2 pipe  
trenching and installation.



160 3/17/92 Centerville C site: wetland cell 2 pipe  
trenching and installation.



161 3/17/92 Centerville C site: wetland cell 2 pipe trenching and installation. Hand lime application on hill in background.



162 3/17/92 Centerville C site: applying lime by hand on upper slope, NE corner.



163 3/18/92 Centerville C site: compacting bentonite seal in wetland cell 2, wet conditions, tiller equipment for mixing bentonite and soil in background.



164 3/18/92 Centerville C site: lime incorporation and shaping with D7 cat at steep area #1, workers waiting for lime load behind Cat.







165 3/18/92 Centerville C site: steep area #1, using loader to deliver lime, placement and application by hand, backhoe incorporation of lime above.

92 3 18



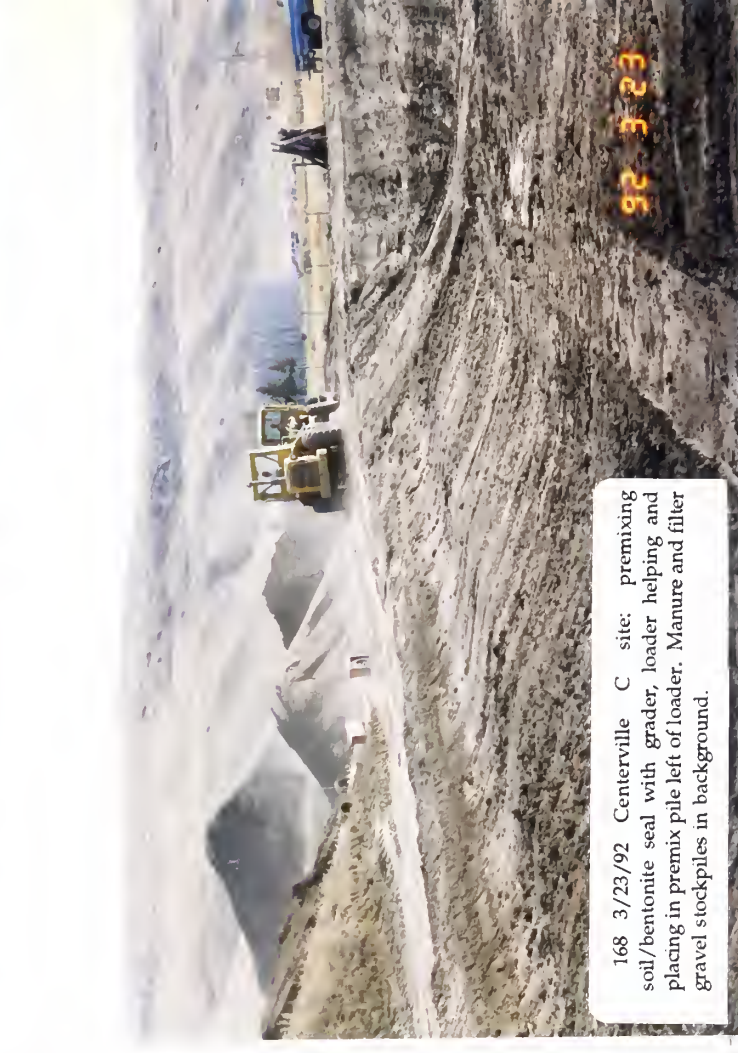
166 3/23/92 Centerville C site: weekend precipitation created puddles in cells, required additional spreading/mixing in cell bottoms prior to compaction.

92 3 23



167 3/23/92 Centerville C site: premixing soil/bentonite seal with grader.

92 3 23



168 3/23/92 Centerville C site: premixing soil/bentonite seal with grader, loader helping and placing in premix pile left of loader. Manure and filler gravel stockpiles in background.

92 3 23





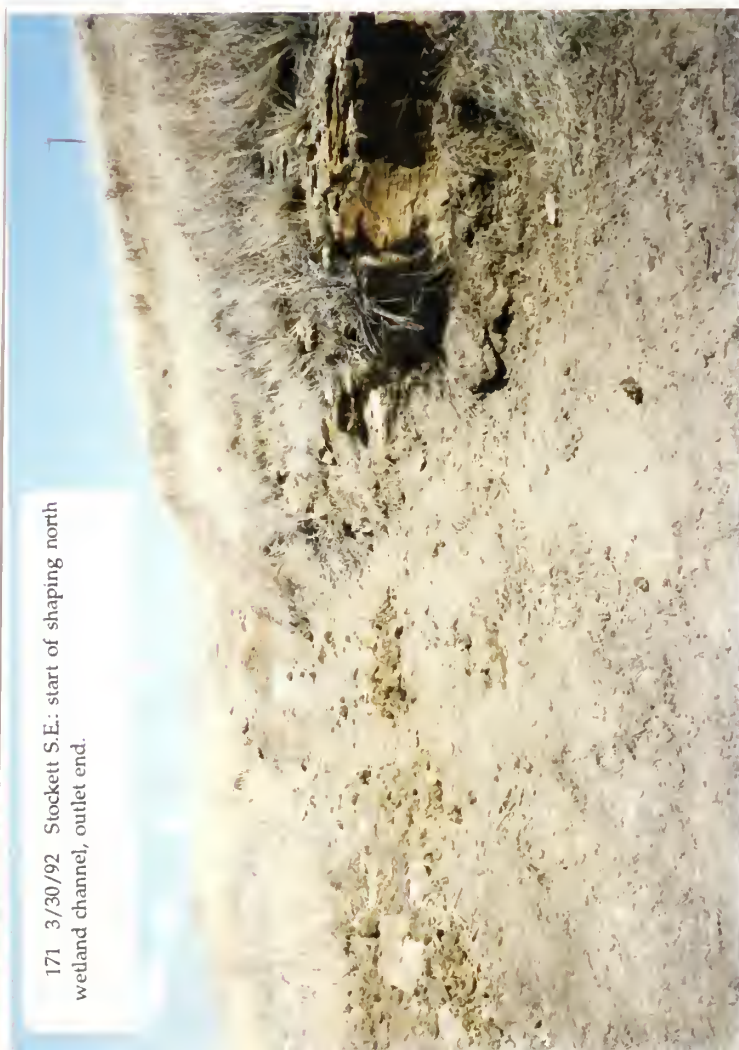
169 3/30/92 Stockett S.E.: shaping west wetland channel with JD 450.

92 3 30

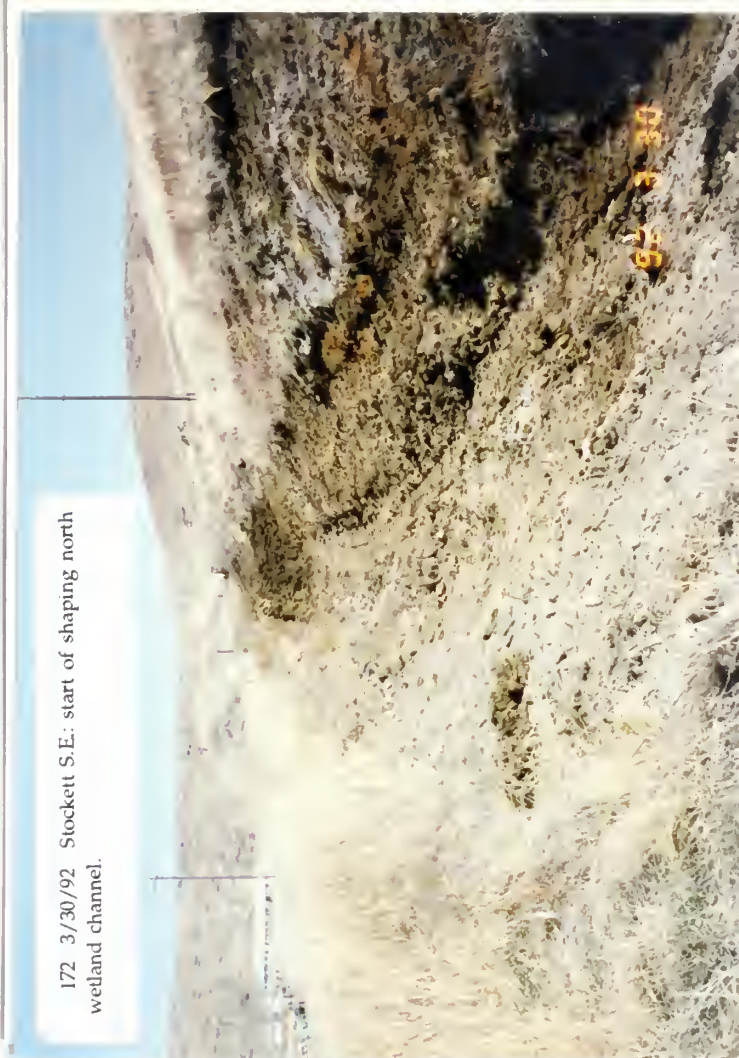


170 3/30/92 Stockett S.E.: shaping west wetland channel with JD 510, spoils from north wetland channel in background.

92 3 30



171 3/30/92 Stockett S.E.: start of shaping north wetland channel, outlet end.



172 3/30/92 Stockett S.E.: start of shaping north wetland channel.

92 3 30





173 3/30/92 Stockett S.E.: NW limestone trench, forms and piping.



174 3/31/92 Stockett S.E.: west wetland channel bentonite soil seal incorporation.



175 3/31/92 Stockett S.E.: north wetland channel shaping and filling low spots with JD 450 and JD 555.



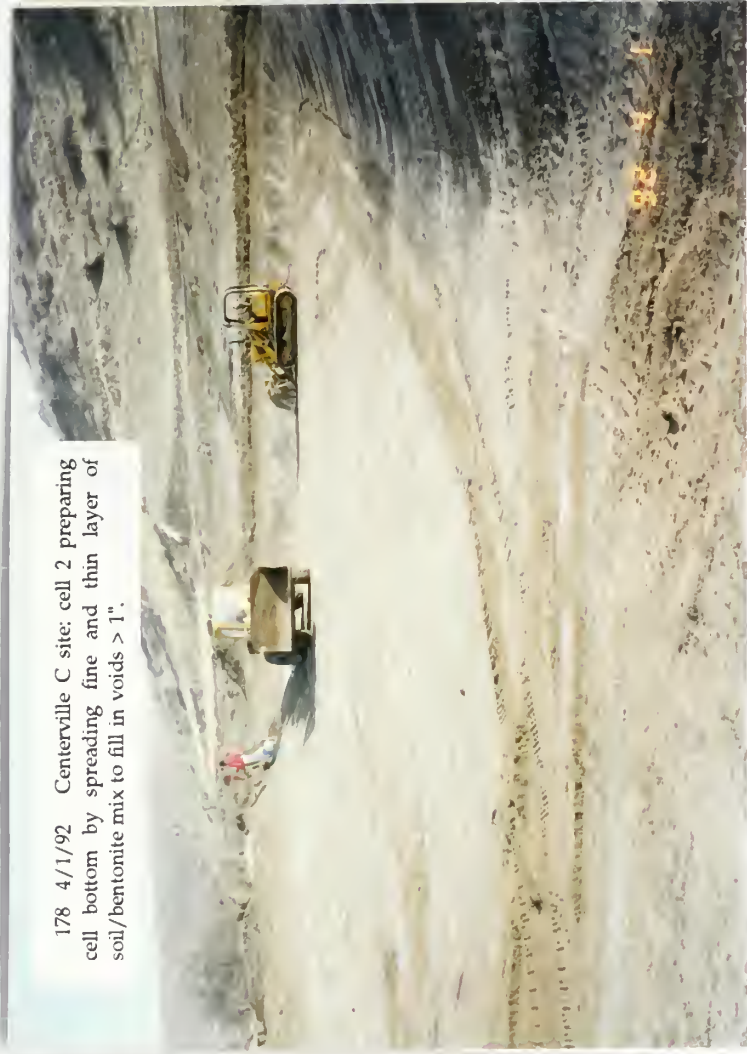
176 3/31/92 Centerville C site: start of excavation of surface water collection basin, bypass piping on right, wetland basins and coversoil stockpiles in background, service hole and limestone trench on left.



177 3/31/92 Centerville C site: cleaning out liner key trenches and cleaning basin bottom for liner preparation.



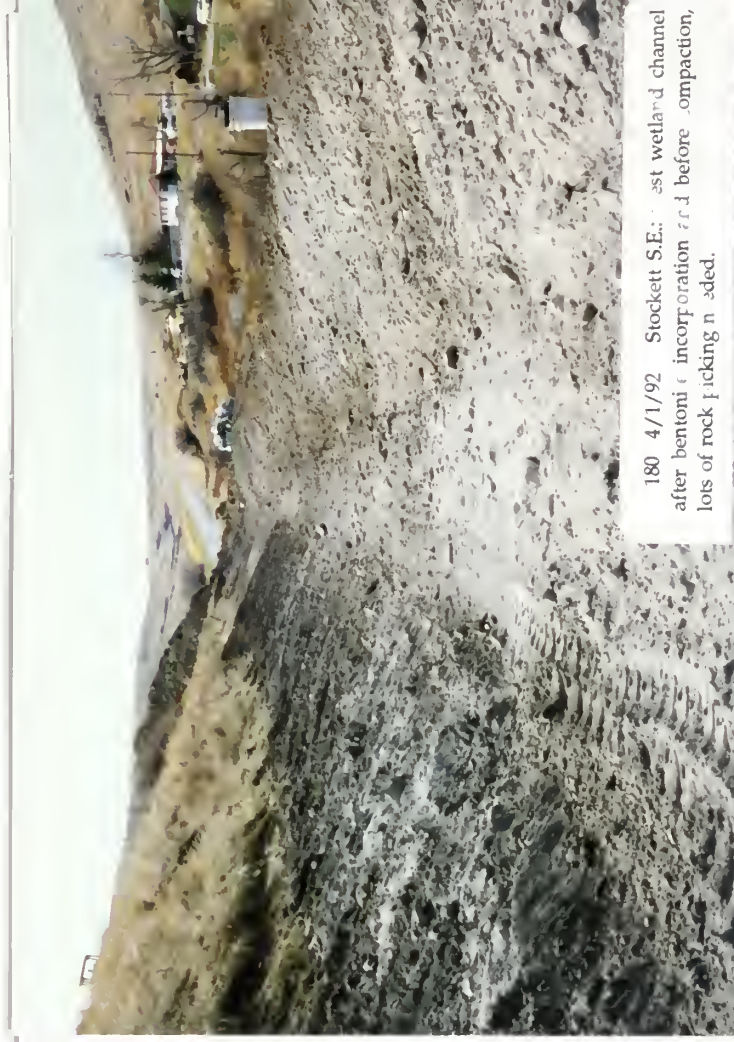
178 4/1/92 Centerville C site: cell 2 preparing cell bottom by spreading fine and thin layer of soil/bentonite mix to fill in voids > 1".



179 4/1/92 Centerville C site: cell 2 key trench, compacting soils around weir outlet structure.

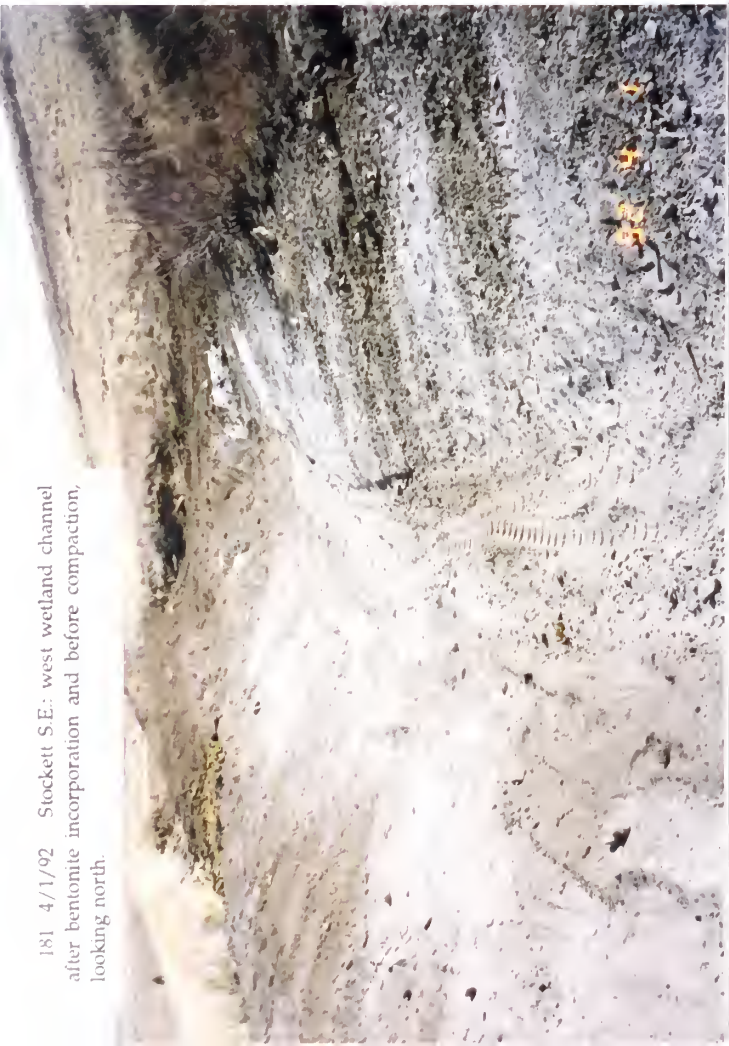


180 4/1/92 Stockett S.E.: east wetland channel after bentonite incorporation prior to compaction, lots of rock picking needed.





181 4/1/92 Stockett S.E.: west wetland channel after bentonite incorporation and before compaction, looking north.



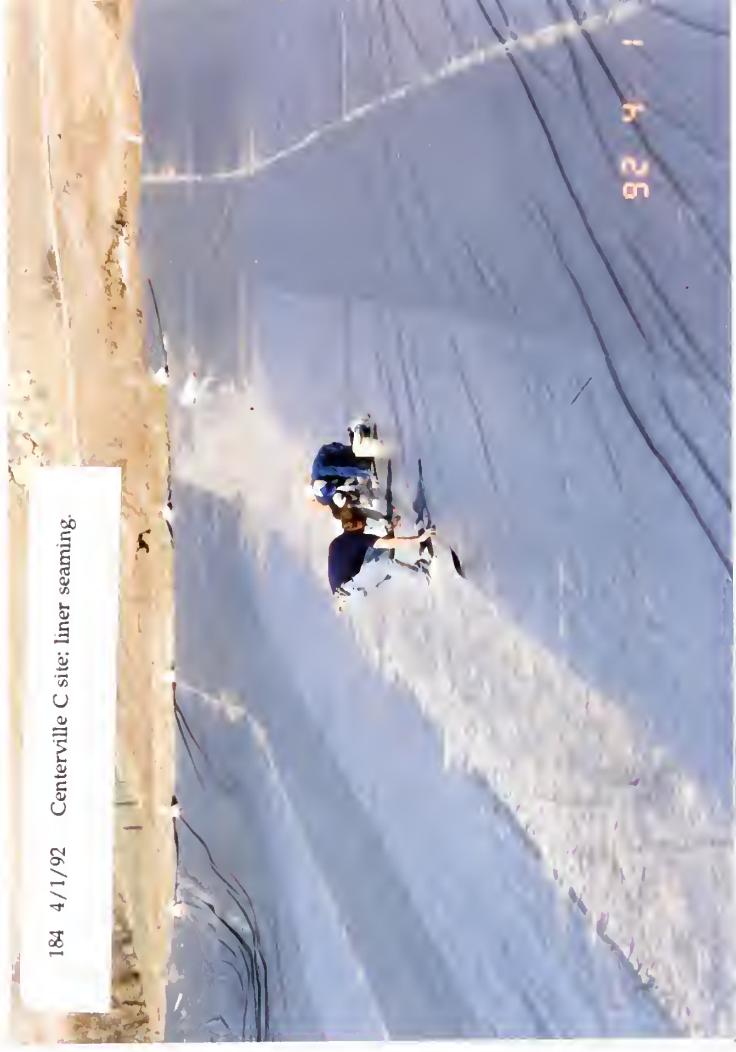
182 4/1/92 Stockett S.E.: north wetland channel bentonite application.



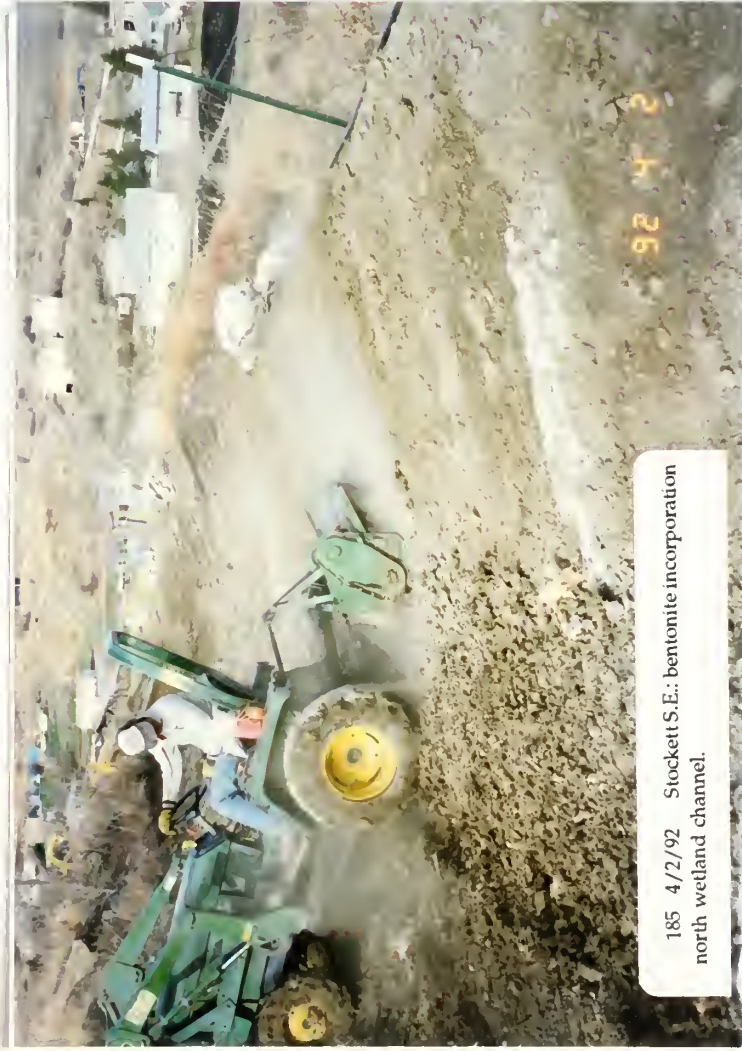
183 4/1/92 Centerville C site: start of liner installation cell 2.



184 4/1/92 Centerville C site: liner seaming.







185 4/2/92 Stockett S.E.: bentonite incorporation north wetland channel.



186 4/2/92 Centerville C site: liner attachment to weir outlet structure.



187 4/2/92 Centerville C site: liner attachment to weir outlet structure.



188 4/2/92 Centerville C site: start of gravel placement on cushion fabric, cell 1, built gravel ramp at centralized cell access location.





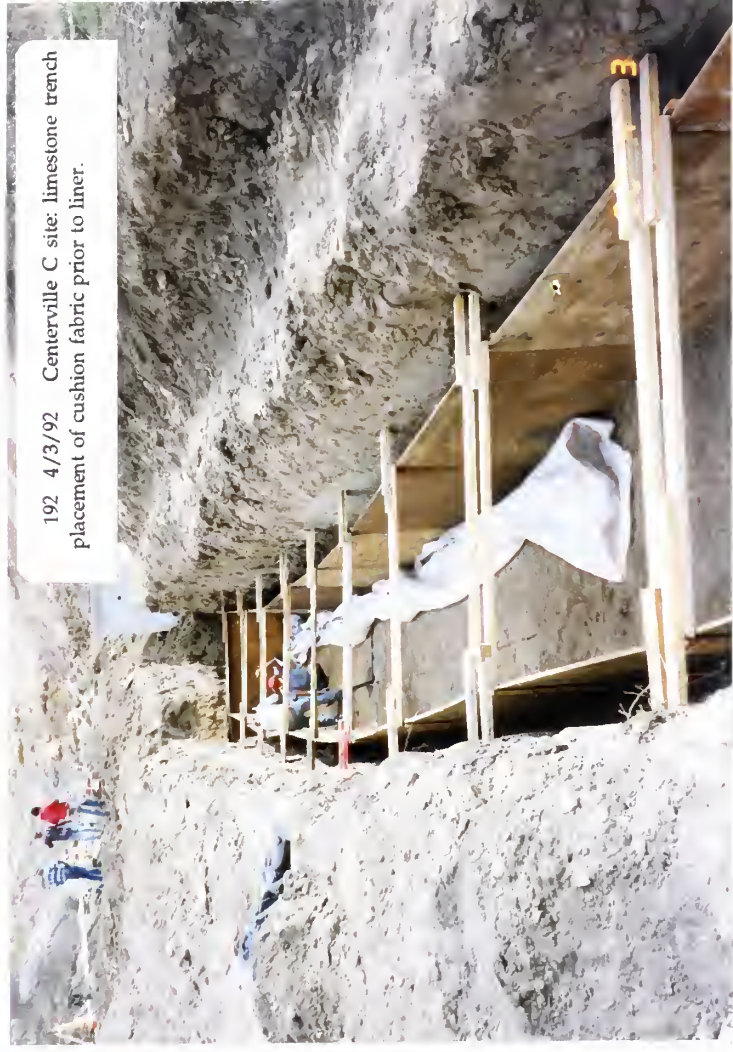
189 4/3/92 Centerville C site: cell 2 and 3 after liner placement and before cushion fabric placement.



190 4/3/92 Centerville C site: cell 2 start of cushion fabric placement.



191 4/3/92 Centerville C site: cell 1 gravel placement, visitors in black.



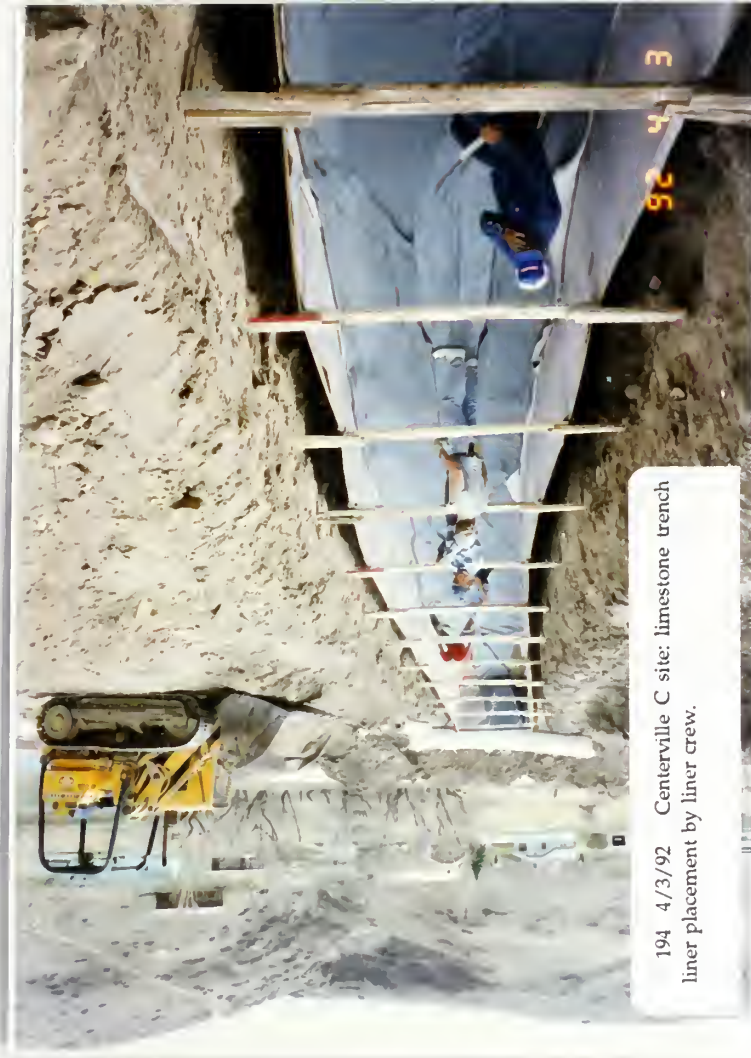
192 4/3/92 Centerville C site: limestone trench placement of cushion fabric prior to liner.



193 4/3/92 Centerville C site: limestone trench placement of cushion fabric prior to liner, lots of watchers.



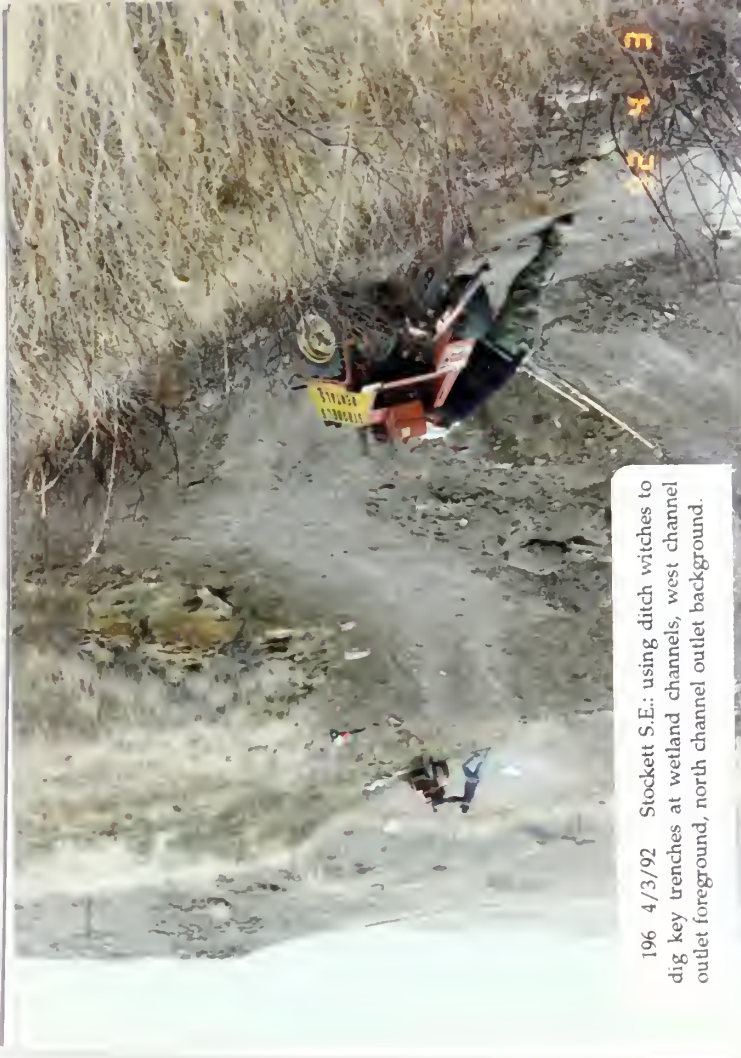
194 4/3/92 Centerville C site: limestone trench liner placement by liner crew.



195 1/3/92 Stockett S.E.: west wetland channel excavation key trenches at baffle locations.



196 4/3/92 Stockett S.E.: using ditch witches to dig key trenches at wetland channels, west channel outlet foreground, north channel outlet background.





198 4/3/92 Centerville C site: liner crew using available space at Centerville to prefabricate liner for limestone trenches.



200 4/6/92 Stockett S.E.: west wetland channel compaction of bentonite/soil seal.



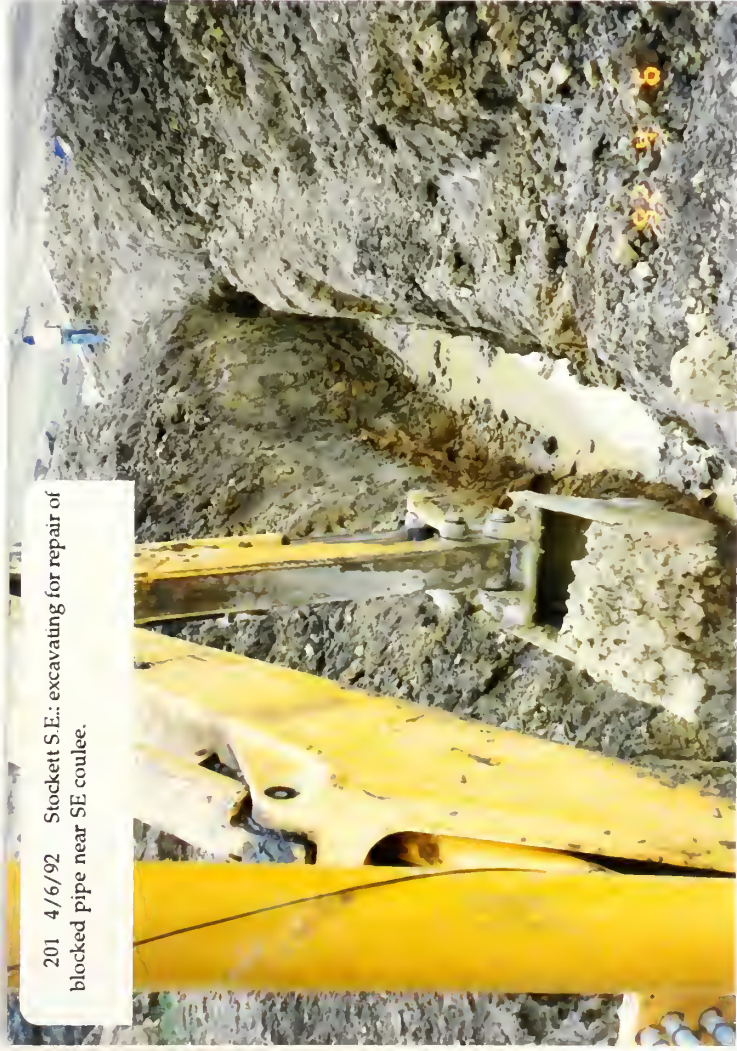
197 4/3/92 Stockett S.E.: west wetland channel baffle key trench, rough and prior to additional placement of bentonite/soil seal.



199 4/4/92 Centerville C site: start of gravel placement in cell 2, built gravel ramp at centralized cell access location.







201 4/6/92 Stockett S.E.: excavating for repair of blocked pipe near SE coulee.



202 4/6/92 Stockett S.E.: SW limestone trench with liner and cushion fabric, west wetland channel in background.



203 4/7/92 Stockett S.E.: west wetland channel starting to place hypalon liner.



204 4/7/92 Stockett S.E.: west wetland channel just prior to liner placement. Note bags of gravel used to hold baffle key from collapse during forklift access.



205 4/7/92 Stockett S.E.: north wetland channel  
preparation for liner placement, key trench and basin  
cleaning



206 4/7/92 Stockett S.E.: north wetland channel  
preparation for liner placement, key trenching with  
ditch witch



207 4/7/92 Stockett S.E.: west wetland channel  
starting to place hypalon liner.



208 4/8/92 Stockett S.E.: north wetland channel  
preparation for liner placement, key trenching with JD  
510 helping hold ditch witch from sliding.

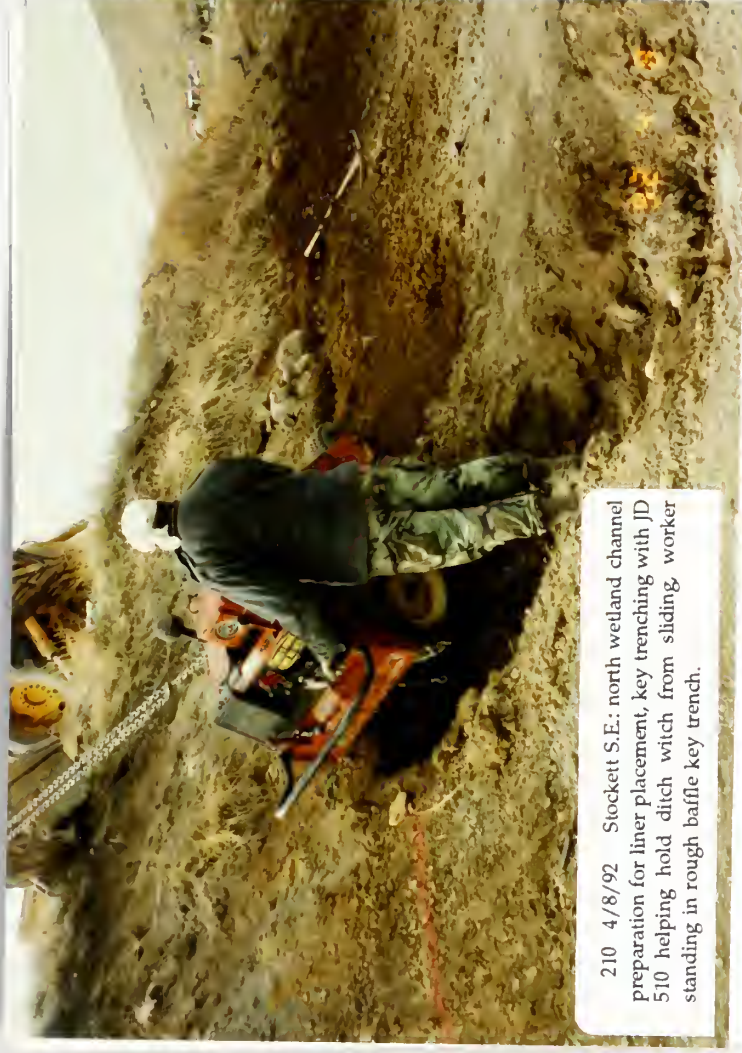




209 4/8/92 Stockett S.E.: north wetland channel preparation for liner placement, key trenching with JD 510 helping hold ditch witch from sliding.



210 4/8/92 Stockett S.E.: north wetland channel preparation for liner placement, key trenching with JD 510 helping hold ditch witch from sliding, worker standing in rough baffle key trench.



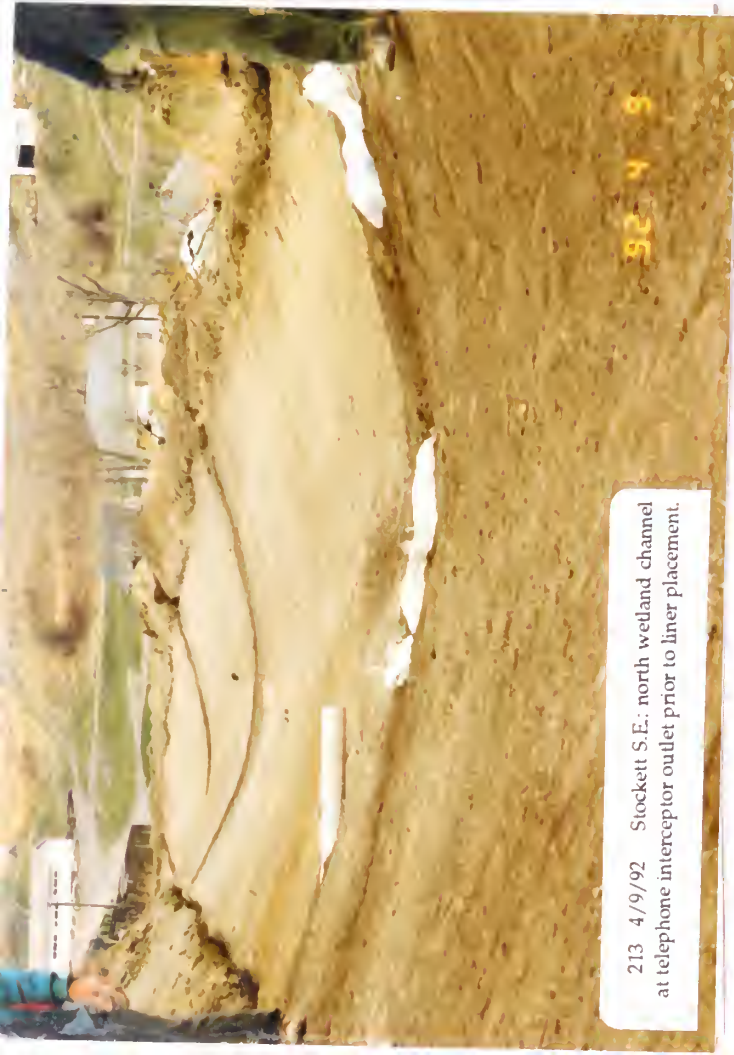
211 4/8/92 Stockett S.E.: north wetland channel preparation for liner placement, filling over excavated baffle key trenches with premix of bentonite/soil then hand compacting and shaping.



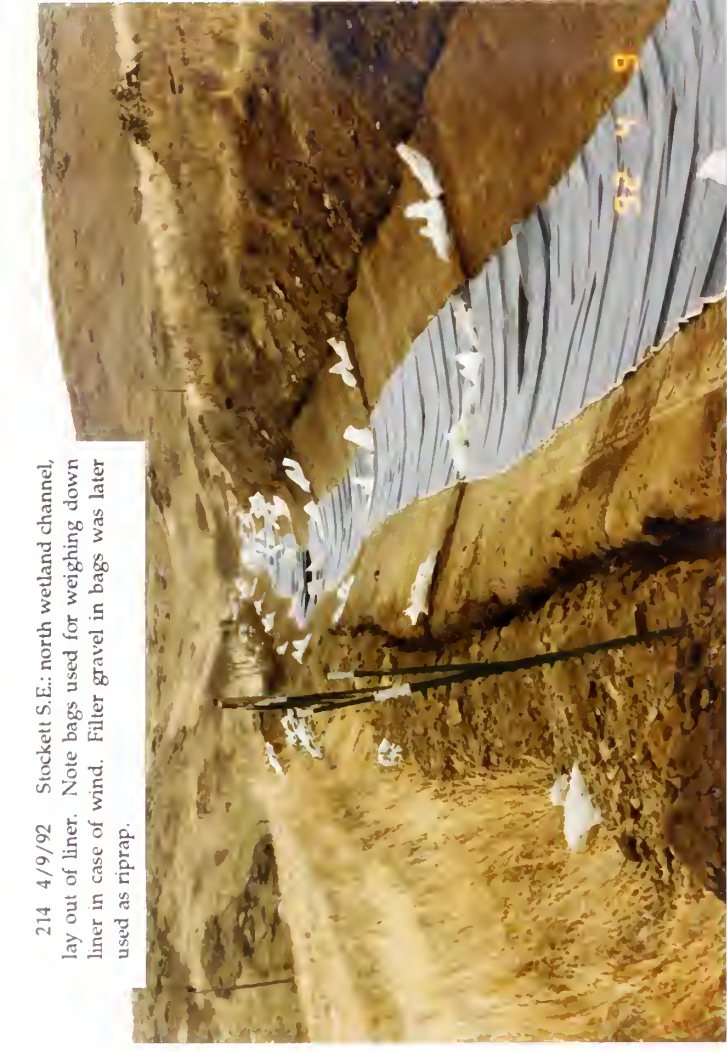
212 4/9/92 Stockett S.E.: north wetland channel at telephone interceptor outlet prior to liner placement.







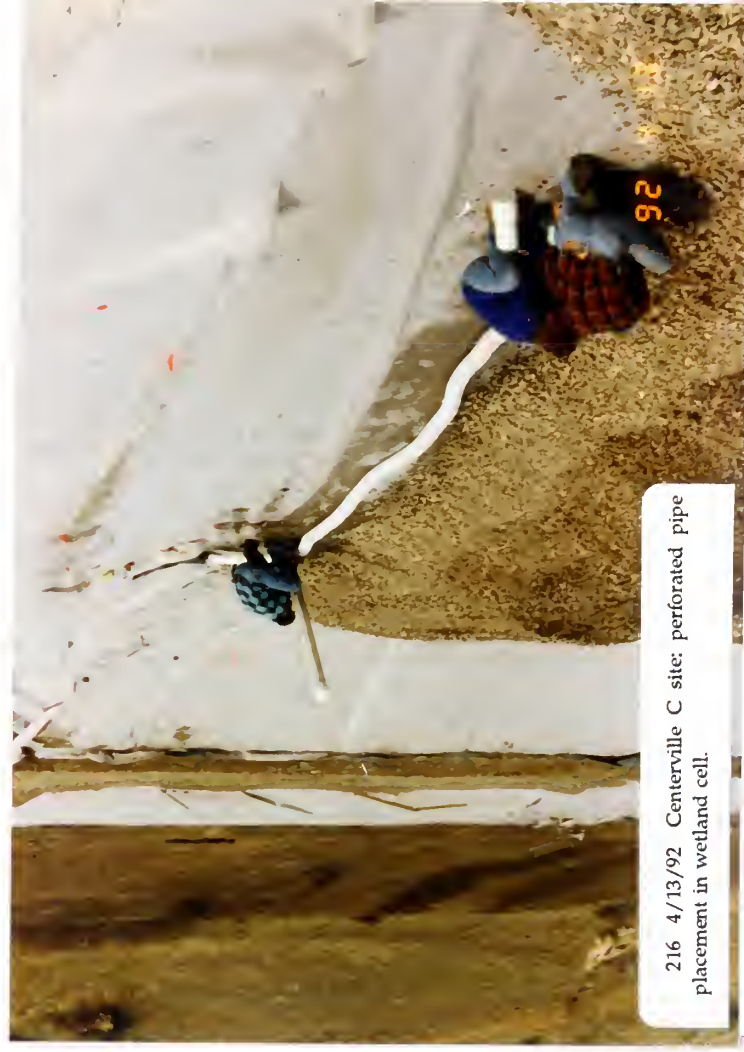
213 4/9/92 Stockett S.E.: north wetland channel at telephone interceptor outlet prior to liner placement.



214 4/9/92 Stockett S.E.: north wetland channel, lay out of liner. Note bags used for weighing down liner in case of wind. Filter gravel in bags was later used as riprap.



215 4/9/92 Stockett S.E.: north wetland channel, lay out of liner.



216 4/13/92 Centerville C site: perforated pipe placement in wetland cell.

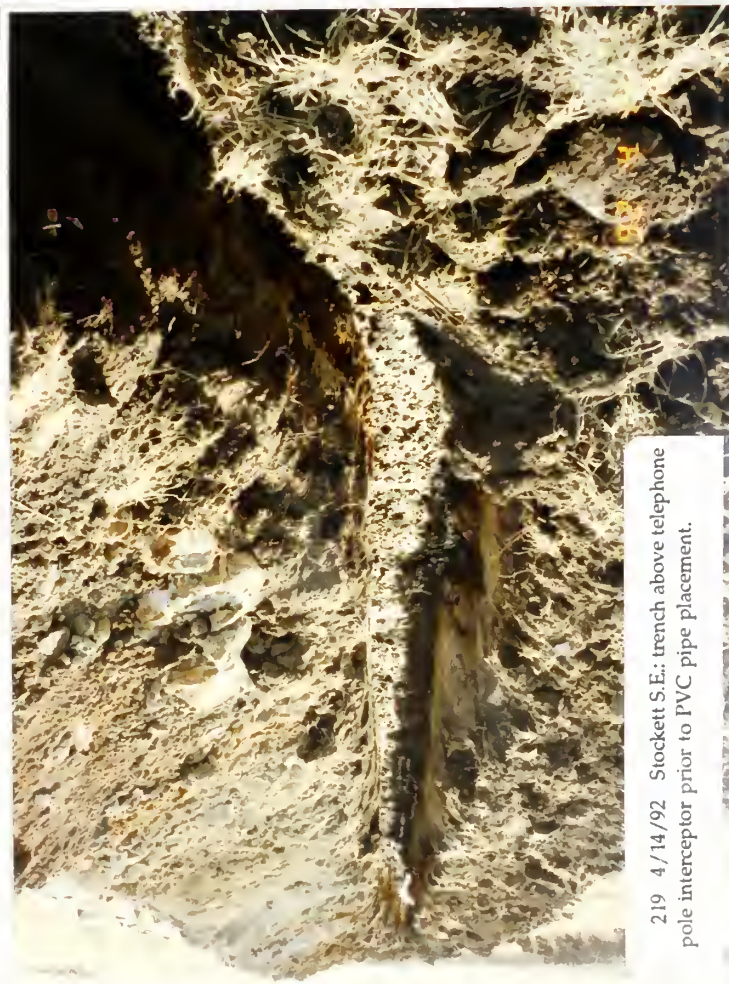




217 4/13/92 Centerville C site: limestone aggregate placement in limestone trench.



218 4/14/92 Centerville C site: limestone aggregate placement in limestone trench.



219 4/14/92 Stockett S.E.: trench above telephone pole interceptor prior to PVC pipe placement.



220 4/14/92 Stockett S.E.: site overview at trench above telephone pole interceptor during PVC pipe placement.



221 4/14/92 Stockett S.E.: site overview at north end of site. Note stockpiled coversoil.



222 4/14/92 Stockett S.E.: site overview at north end of site.



223 4/14/92 Stockett S.E.: NW limestone trench, installing limestone aggregate.



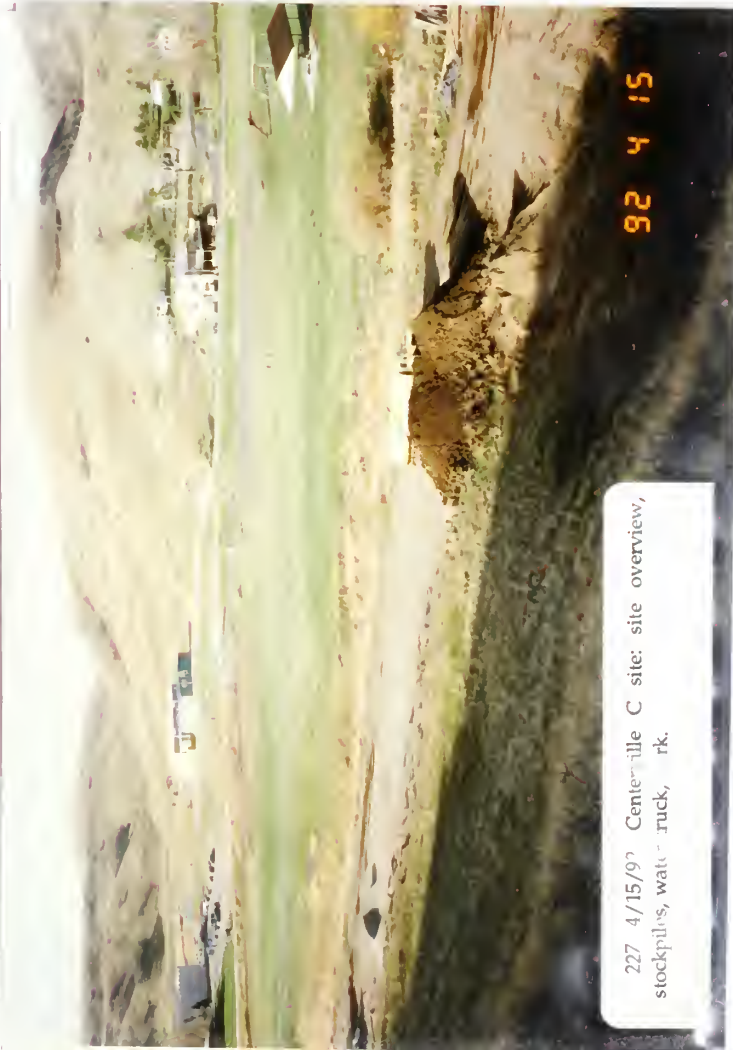
224 4/14/92 Stockett S.E.: limestone trench common problem, tears of liner corners, patched later.





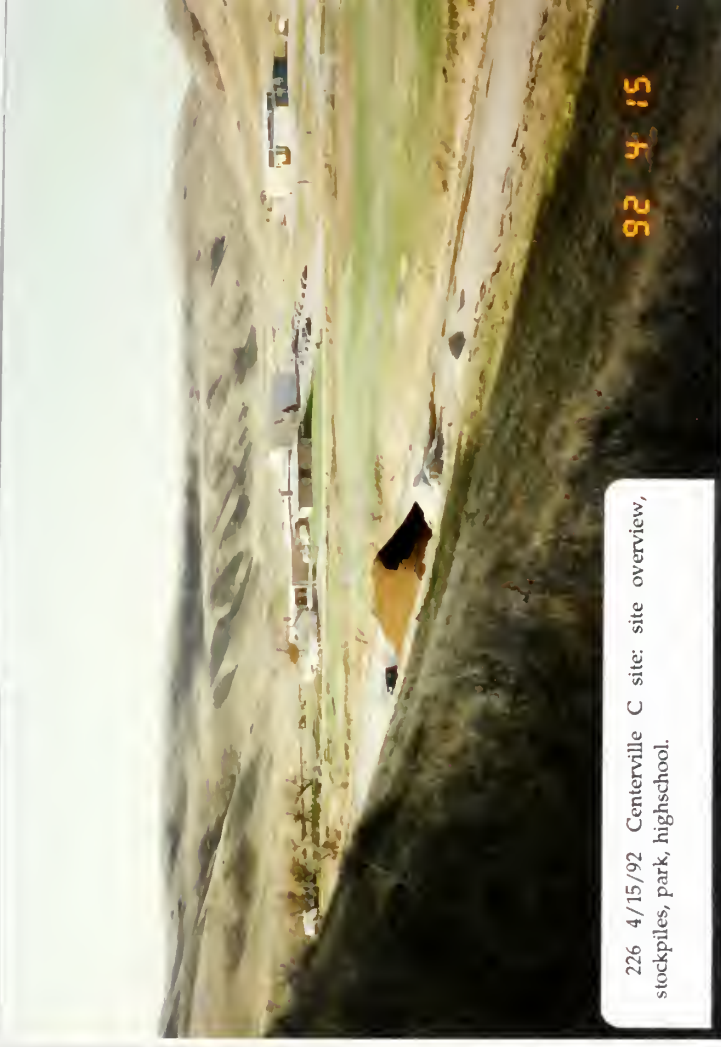
225 4/14/92 Stockett S.E.: backfilling of telephone trench interceptor.

92 4 15



227 4/15/92 Centerville C site: site overview, stockpiles, water truck, rk.

92 4 15



226 4/15/92 Centerville C site: site overview, stockpiles, park, highschool.

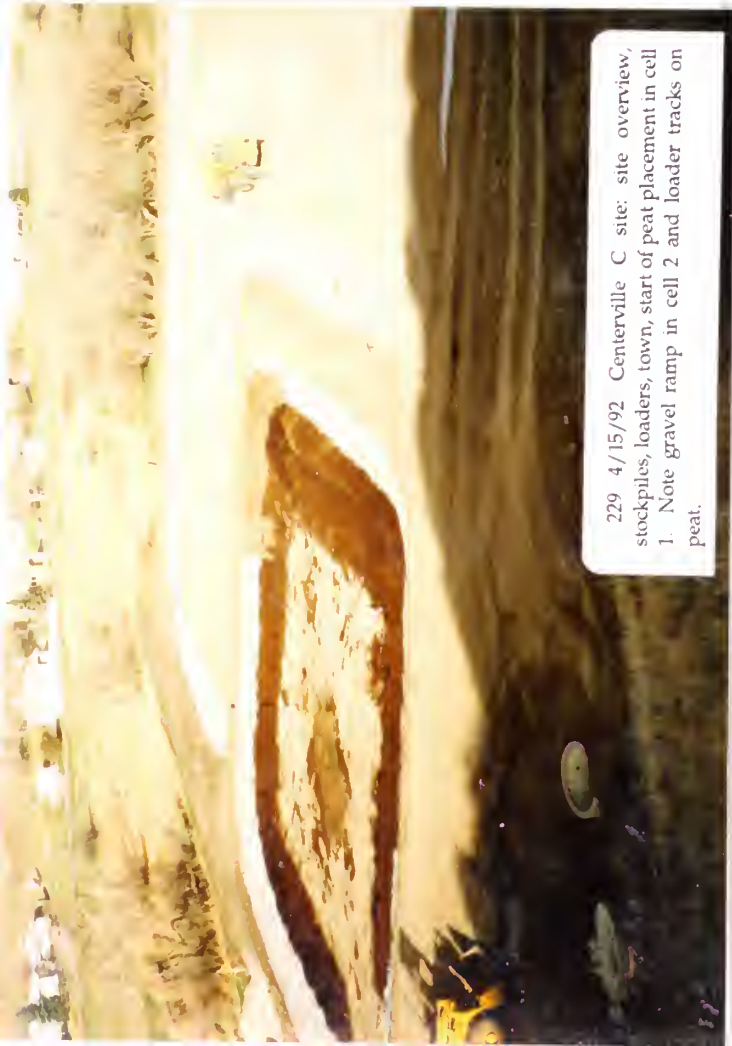
92 4 15



228 4/15/92 Centerville C site: site overview, stockpiles, loader, park, start of peat placement in cell 1. Note gravel ramp and peat spilled.

92 4 15

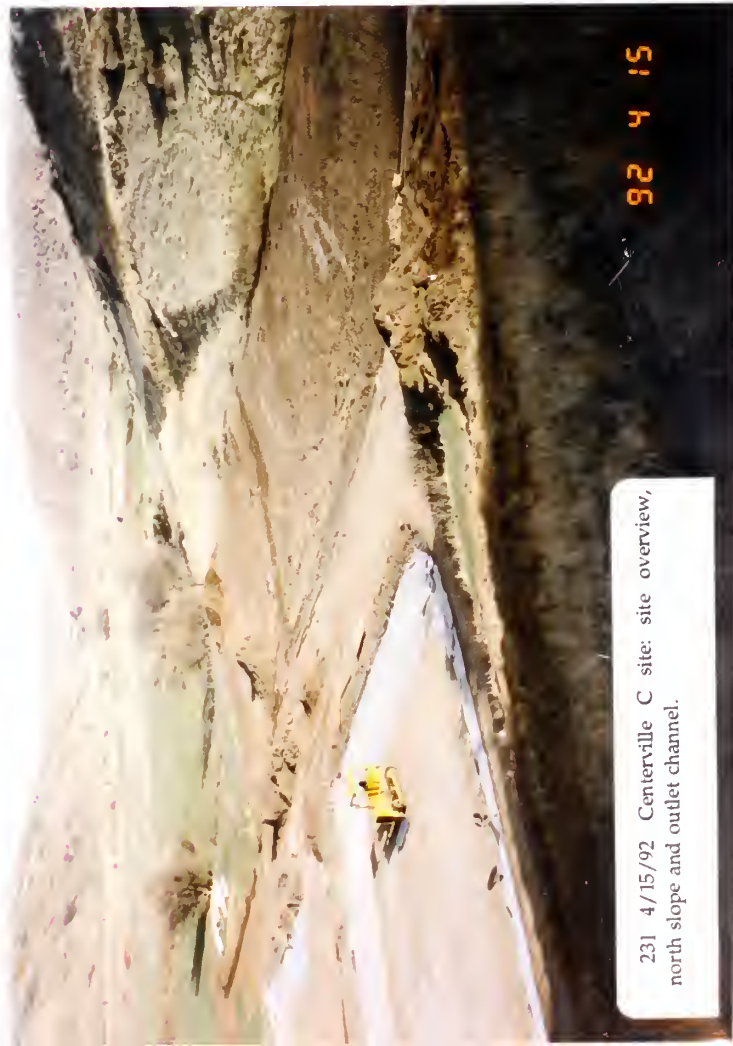




229 4/15/92 Centerville C site: site overview, stockpiles, loaders, town, start of peat placement in cell 1. Note gravel ramp in cell 2 and loader tracks on peat.



230 4/15/92 Centerville C site: site overview, loader, JD 450, final grading of gravel in cell 2. Note gravel ramp in cell 2, lower left.



231 4/15/92 Centerville C site: site overview, north slope and outlet channel.

232 4/15/92 Stockett S.E.: west wetland channel, hypalon liner in place.





233 4/15/92 Stockett S.E.: limestone trench corner tear in liner later patched, gap between liner and plywood form was later filled with bentonite/soil mix.



234 4/15/92 Stockett S.E.: limestone trench closeup of corner tear in liner.



235 4/15/92 Stockett S.E.: SW limestone trench, S end, corner problems required re-excavation and repair.



236 4/15/92 Stockett S.E.: SW limestone trench, S end, corner problems required re-excavation and repair.





237 4/16/92 Stockett S.E.: intersection of  
interceptor drains, downgradient crossover to match  
source water oxygen concentrations.



238 4/16/92 Stockett S.E.: intersection of  
interceptor drains, upgradient crossover to match  
source water oxygen concentrations.



239 4/21/92 Stockett S.E.: north channel looking  
northeast during placement of riprap dikes.



240 4/21/92 Stockett S.E.: 1 of 5 panorama of west  
side from south end to north end.

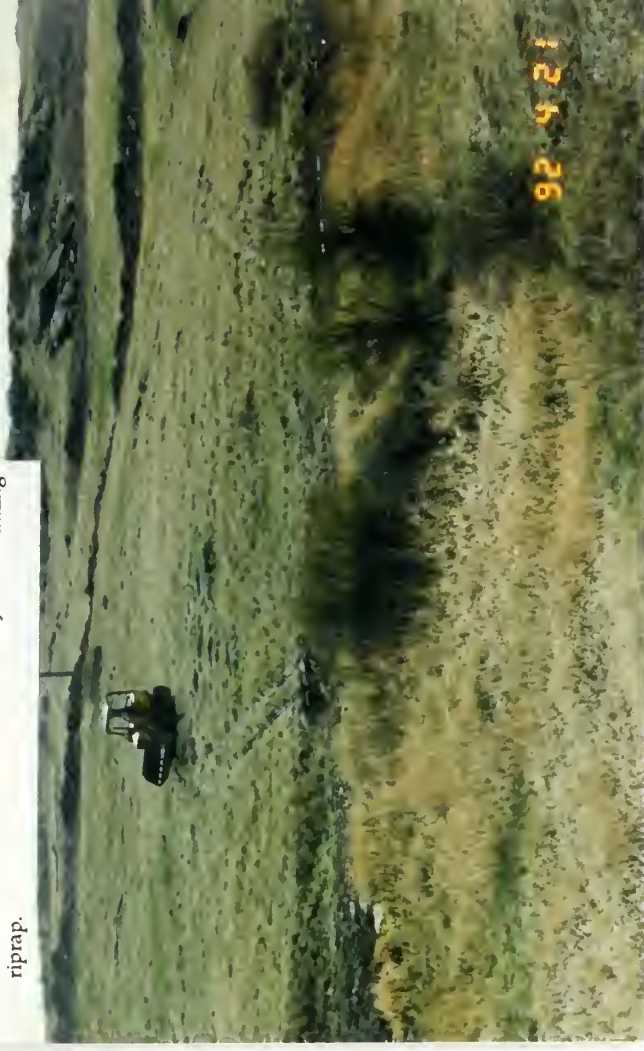




241 4/21/92 Stockett S.E.: 2 of 5 panorama of west side from south end to north end.



242 4/21/92 Stockett S.E.: 3 of 5 panorama of west side from south end to north end. JD 555 hauling riprap.



243 4/21/92 Stockett S.E.: 4 of 5 panorama of west side from south end to north end.



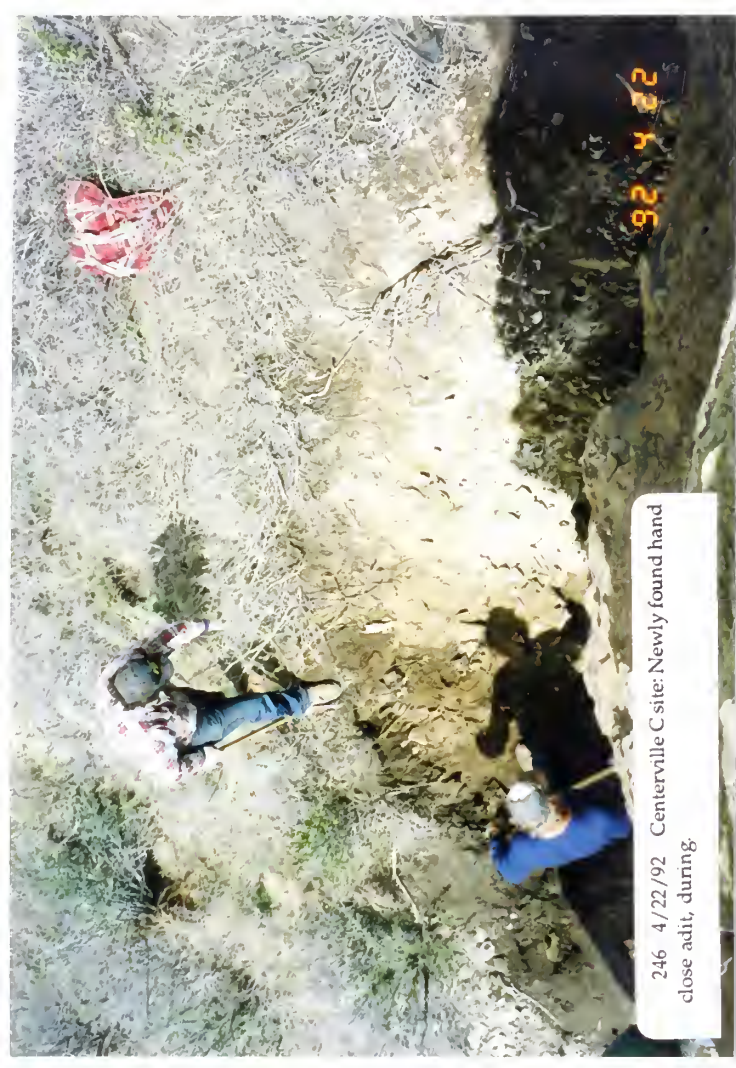
244 4/21/92 Stockett S.E.: 5 of 5 panorama of west side from south end to north end.







245 4/22/92 Centerville C site: Newly found hand close adit, before.



246 4/22/92 Centerville C site: Newly found hand close adit, during



247 4/22/92 Centerville C site: Newly found hand close adit, after

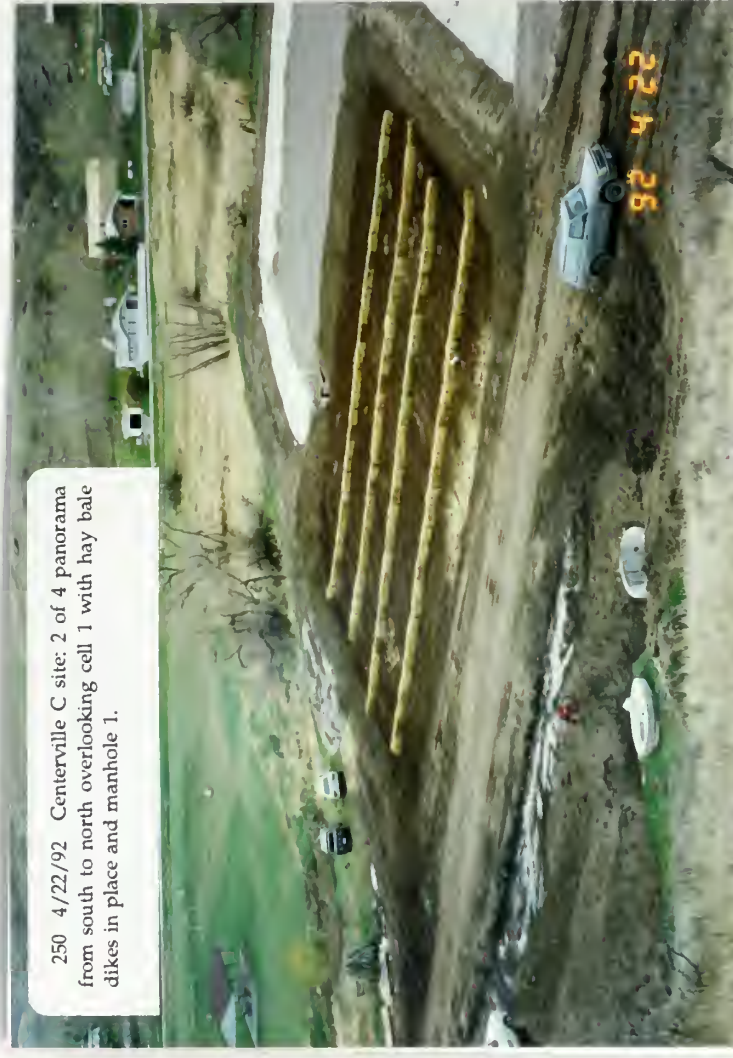


248 4/22/92 Centerville C site: looking west at site from top of knoll. Note cell 1 with hay bale dikes and cell 3 placing Peat-DCW. Limestone drain in center of photo.





249 4/22/92 Centerville C site: 1 of 4 panorama from south to north overlooking access road to wetland and ball park. Coversoil and manure stockpiles. Truck hauling Peat-DCW.



250 4/22/92 Centerville C site: 2 of 4 panorama from south to north overlooking cell 1 with hay bale dikes in place and manhole 1.



251 4/22/92 Centerville C site: 3 of 4 panorama from south to north cell 2 with gravel in place and cell 3 peat-DPW being placed. Note JD 450 fine grading peat.



252 4/22/92 Centerville C site: 4 of 4 panorama from south to north overlooking north end of project. JD 450 on gravel ramp into cell 3.



254 4/24/92 Centerville C site: peat-OM consisting of straw, limestone aggregate and manure in cell 2.



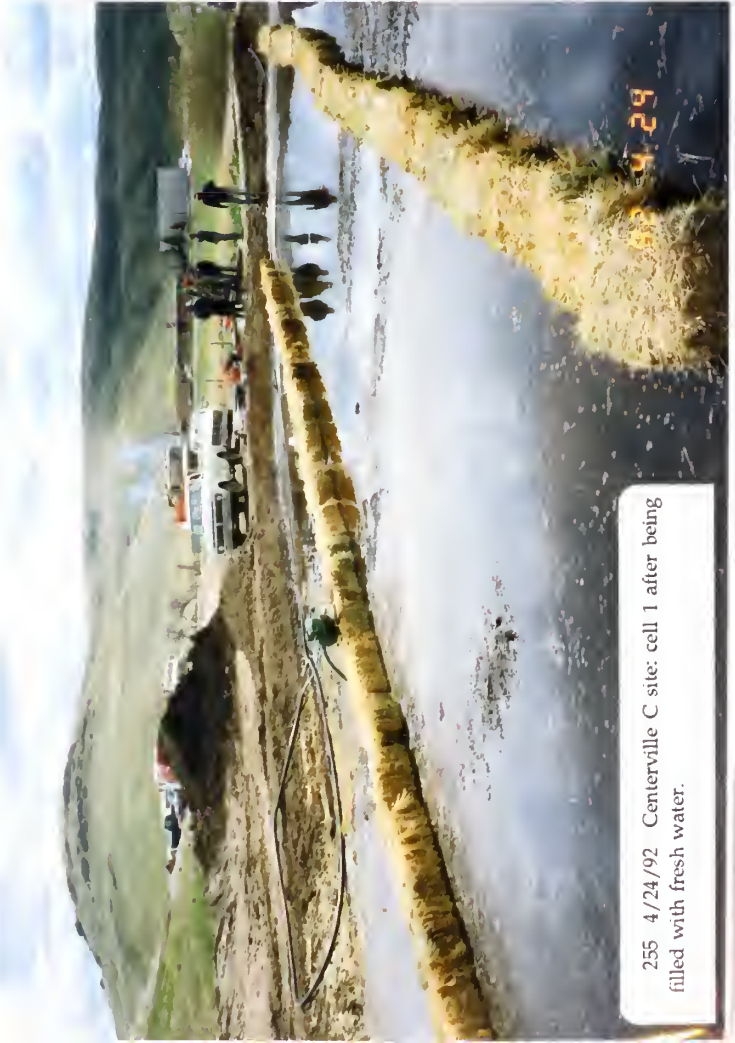
256 4/27/92 Centerville C site: placing straw with loader for peat-OM mix in north end of Cell 2.



253 4/24/92 Cell 2 + Cell 3 Centerville C site: peat-OM being mixed in cell 2 with loader.



255 4/24/92 Centerville C site: cell 1 after being filled with fresh water.





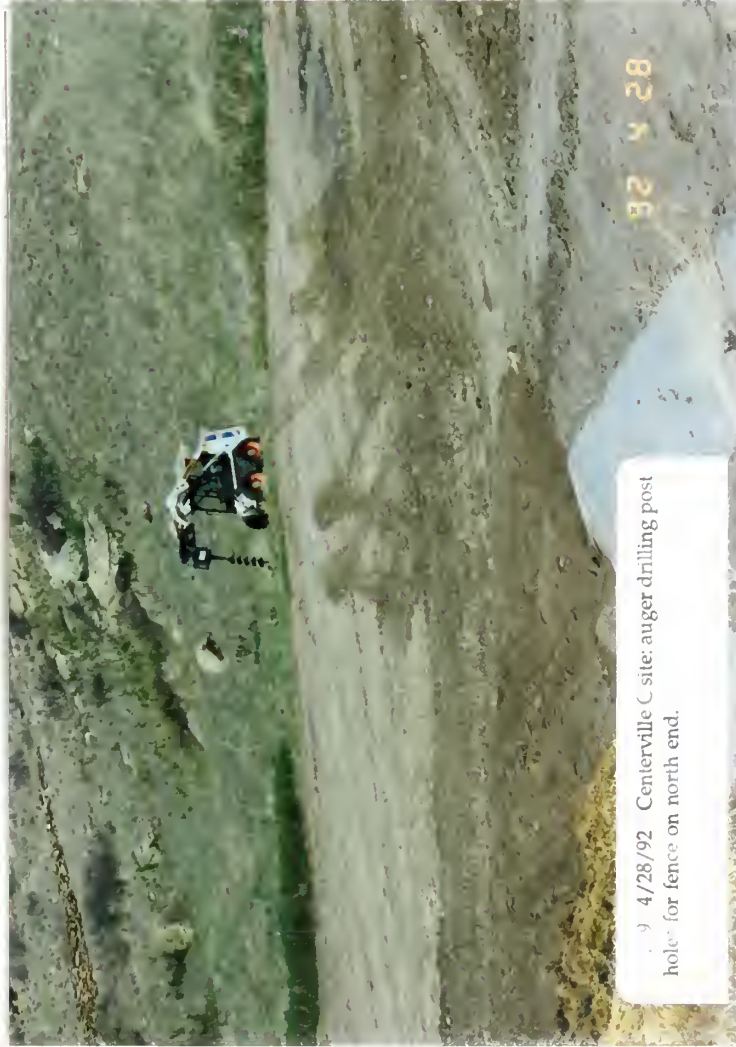
257 4/27/92 Centerville C site: culvert in place in north channel.



258 4/27/92 Centerville C site: staking hay bale dikes in cell 3.



259 4/28/92 Centerville C site: auger drilling post hole for fence on north end.



260 4/28/92 Centerville C site: mixing peat-OM with JD 450 in cell 2.







261 4/28/92 Centerville C site: channel on Marko's property, west of site. Note salvaged 12" PVC pipe.



262 4/28/92 Centerville C site: looking west from cell 3 at Marko's channel. Note stock tank prior to installation.



263 4/28/92 Centerville C site: graded channel on Marko's property. Looking southeast towards wetland



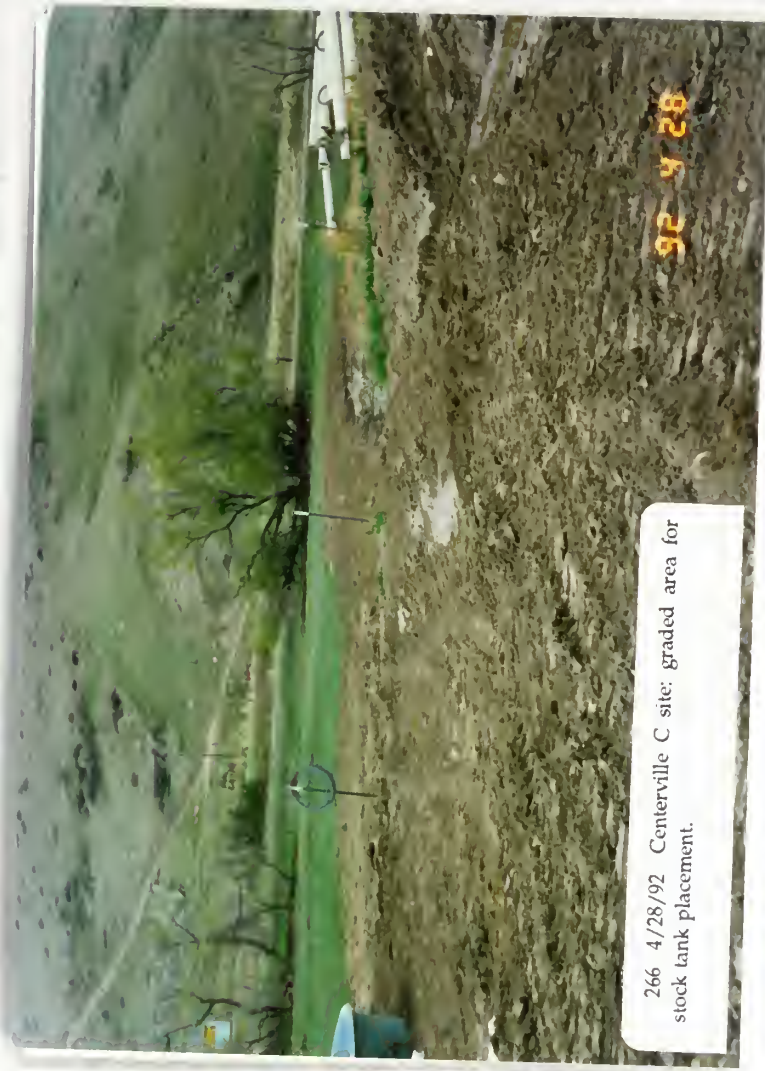
264 4/28/92 Centerville C site: looking east from Marko's property toward east slope.





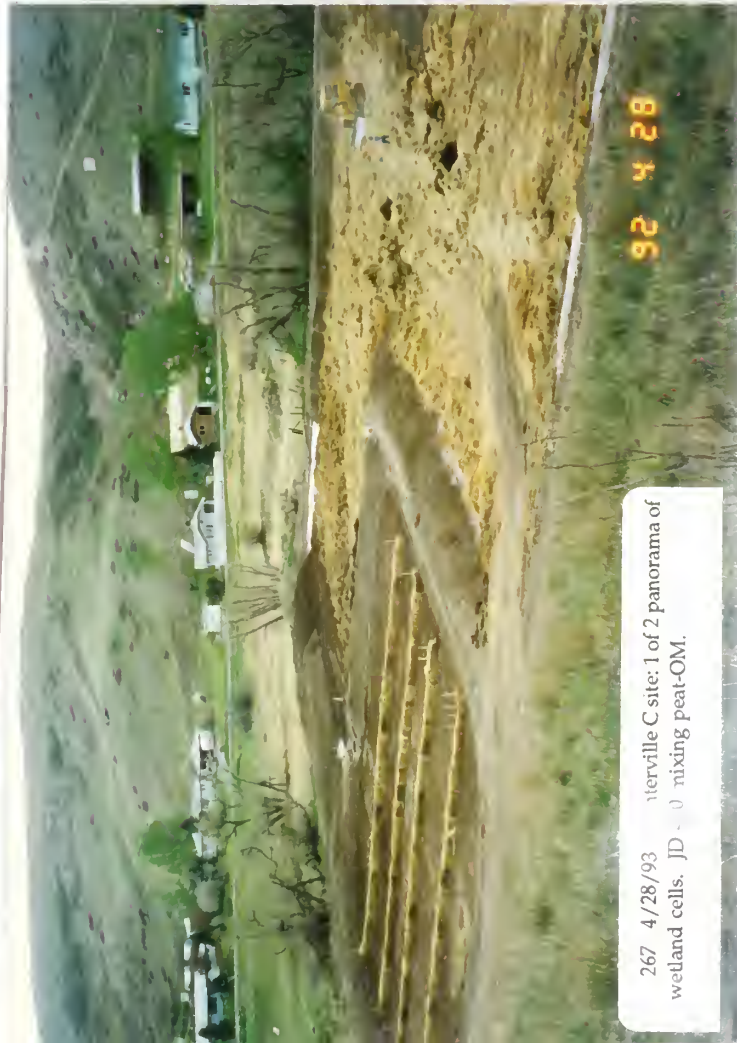
265 4/28/92 Centerville C site: looking west at grade of channel on Marko's property.

92 4 28



266 4/28/92 Centerville C site: graded area for stock tank placement.

92 4 28



267 4/28/93 Centerville C site: 1 of 2 panorama of wetland cells. JD - 0 mixing peat-OM.

92 4 28



268 4/28/92 Centerville C site: 2 of 2 panorama of wetland cells. Loader placing coversoil along cell 2 dike.

92 4 28

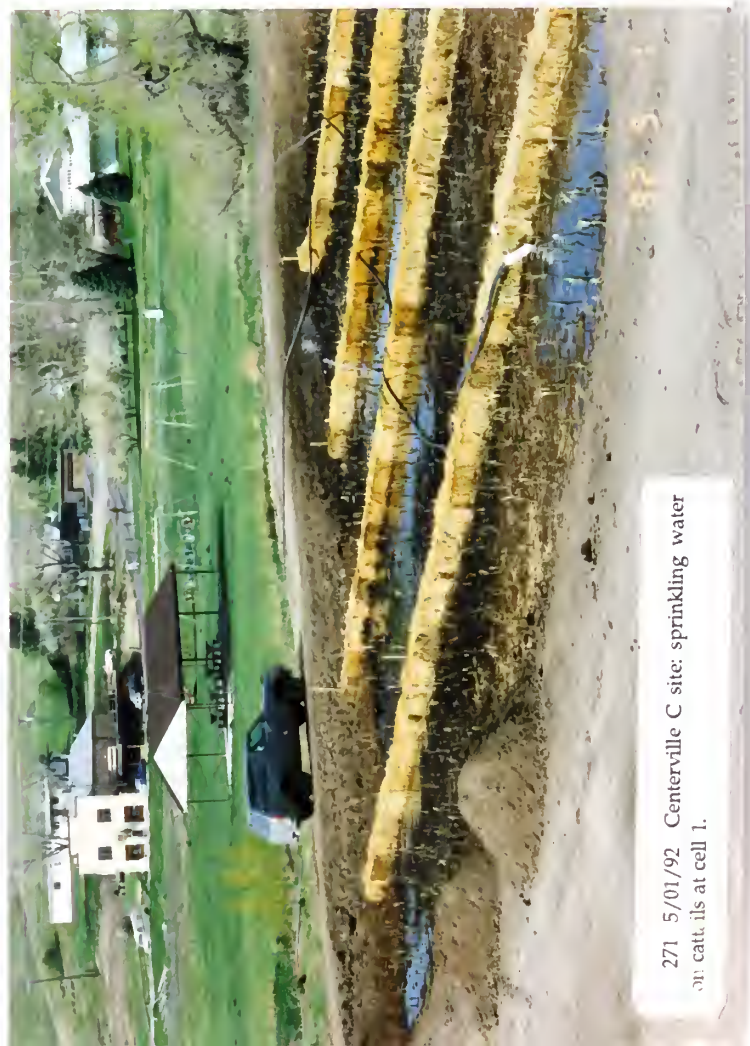




269 4/30/92 Centerville C site: straw supply from Chartier property.



270 5/01/92 Centerville C site: unloading trees for Centerville Park.



271 5/01/92 Centerville C site: sprinkling water on cattails at cell 1.



272 5/01/92 Centerville C site: planting cattails in cell 3.



273 5/01/92 Centerville C site: planting cattails in cell 3.



274 5/01/92 Centerville C site: planting cattails in cell 3.



275 5/01/92 Centerville C site: closeup of cattails and best shovel type.



276 5/01/92 Centerville C site: excavation for transplanting trees.







277 5/01/92 Centerville C site: transplanting trees.



278 5/04/92 Centerville C site: 1 of 4 panorama of wetland cells from south to north.



279 5/04/92 Centerville C site: 2 of 4 panorama of wetland cells from south to north.



280 5/04/92 Centerville C site: 3 of 4 panorama of wetland cells from south to north.



281 5/04/92 Centerville C site: 4 of 4 panorama of wetland cells from south to north.



282 5/05/92 Centerville C site: fresh water from cell 3 released into Marko's channel making grading difficult.



283 5/05/92 Centerville C site: excavated material from Marko's channel to correct grade. Water in channel made final grading very difficult.



284 5/05/92 Centerville C site: water in Marko's channel made final grading difficult.





285 5/05/92 Centerville C site: regrading Marko channel to correct grade.

92 5 5



286 5/05/92 Centerville C site: regrading Marko channel to correct grade.

92 5 5



287 5/05/92 Centerville C site: placing/mixing peat-OM in cell 2 with JD 450.

92 5 5



288 5/06/92 Stockett S.E.: incorporating lime with disk on east side of site.

92 5 8





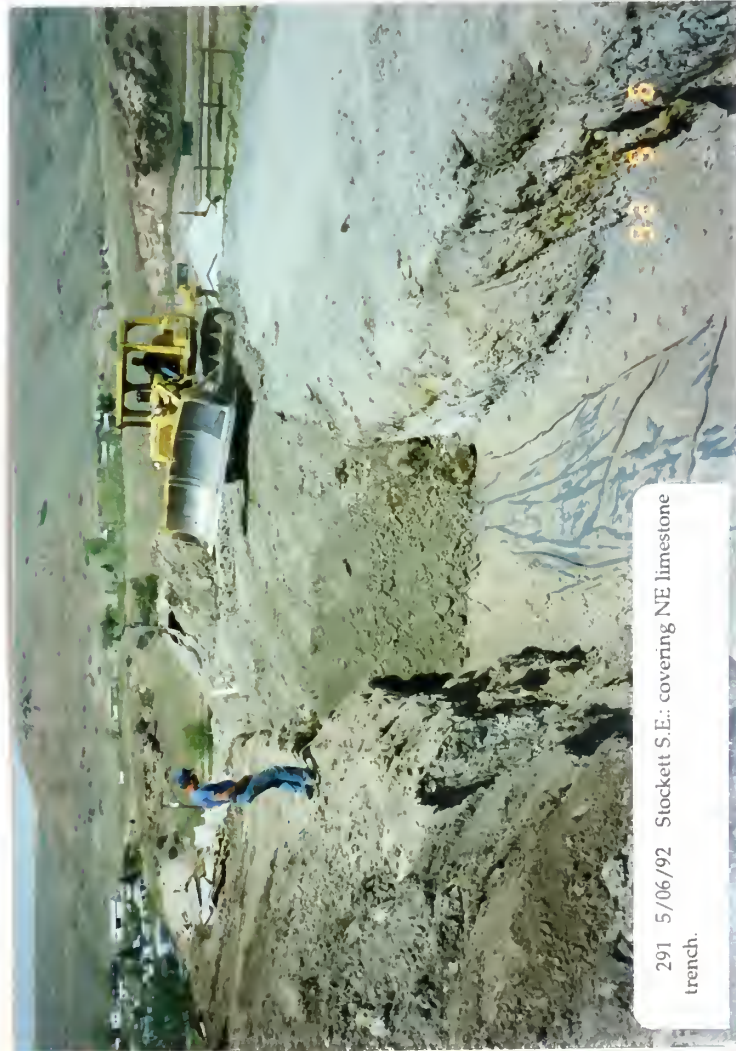
289 5/06/92 Stockett S.E.: limed area in southeast coulee.

92 5 6



290 5/06/92 Stockett S.E.: covering NE limestone trench.

92 5 6



291 5/06/92 Stockett S.E.: covering NE limestone trench.

92 5 6



292 5/13/92 Centerville C site: 1 of 5 panorama from south to north, fuel truck.





293 5/13/92 Centerville C site: 2 of 5 panorama from south to north, loader, trees in park.



294 5/13/92 Centerville C site: 3 of 5 panorama from south to north, loader, cells 1 and 2.



295 5/13/92 Centerville C site: 4 of 5 panorama from south to north, cells 2 and 3.



296 5/13/92 Centerville C site: 5 of 5 panorama from south to north, cell 2, loader placing coversoil on north slope.

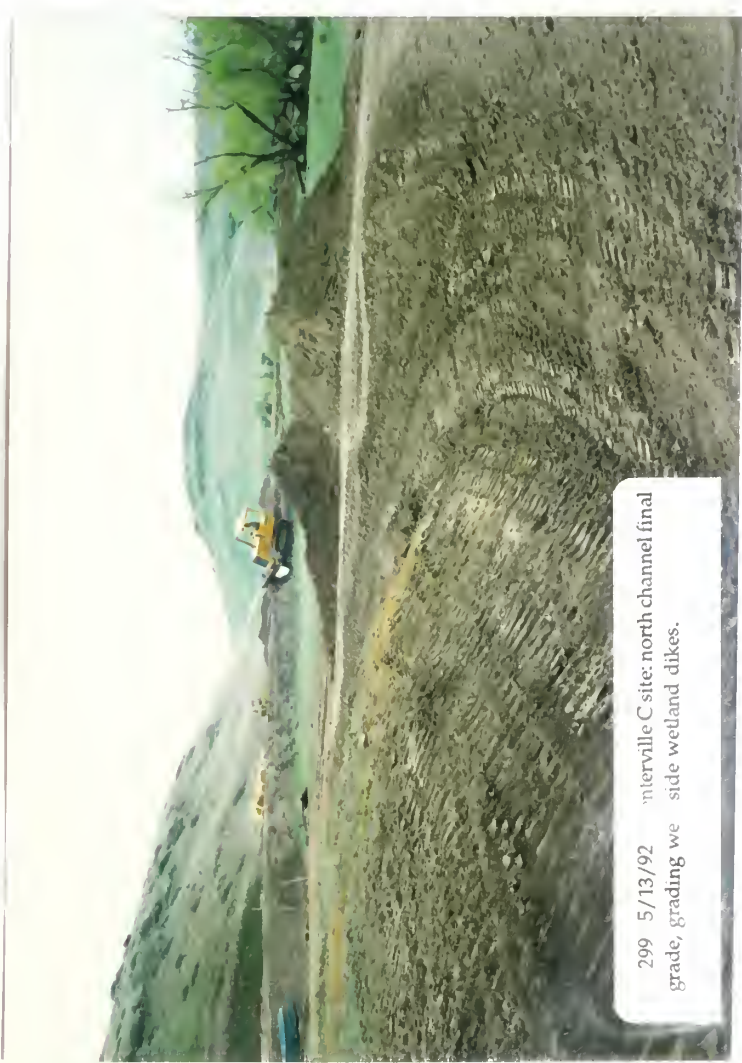




297 5/13/92 Centerville C site: grading west side of wetland dikes.



298 5/13/92 Centerville C site: west side wetland, moving coversoil.



299 5/13/92 Centerville C site: north channel final grade, grading west side wetland dikes.



300 5/13/92 Centerville C site: north channel and placing coversoil on north slope.





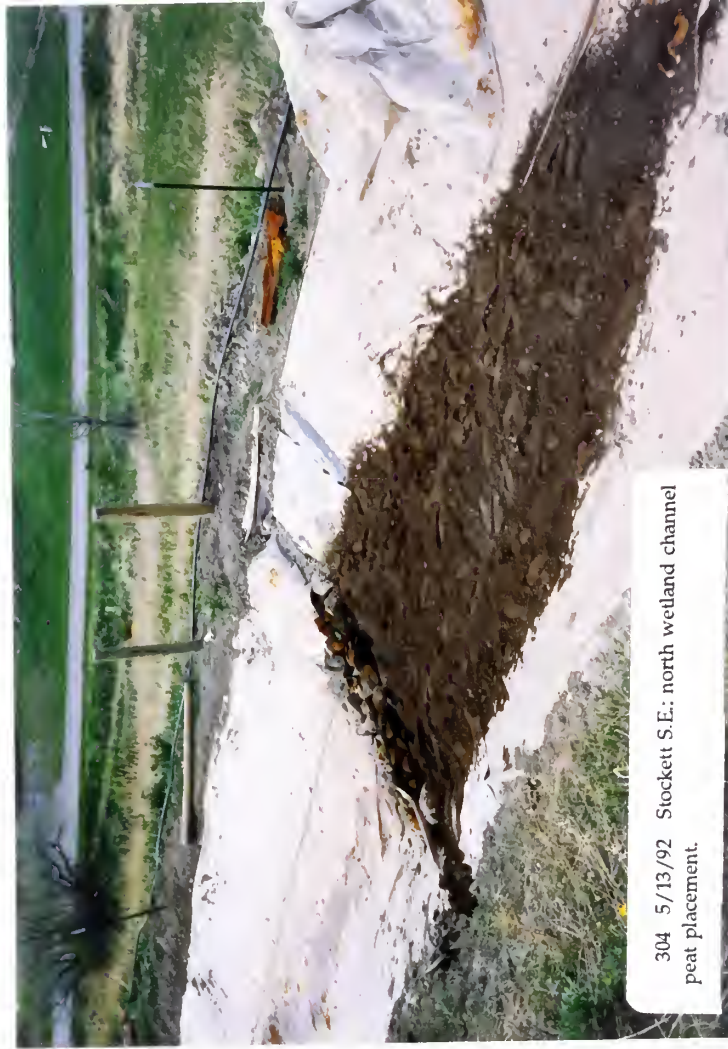
301 5/13/92 Centerville C site: grade on west side of wetland dikes.



302 5/13/92 Centerville C site: grading west side of wetland dikes and placing coversoil on north slope.



303 5/13/92 Stockett S.E.: north wetland channel peat placement.



304 5/13/92 Stockett S.E.: north wetland channel peat placement.





305 5/14/92 Stockett S.E.: cleanout # 39 leaking again.



306 5/19/92 Stockett S.E.: repair of southwest interceptor drain found to be plugged and was backed-up and leaking from cleanout #39 up gradient.



307 5/19/92 Stockett S.E.: repair of southwest interceptor drain. Excavation of old trench to expose geocomposite and pipe.

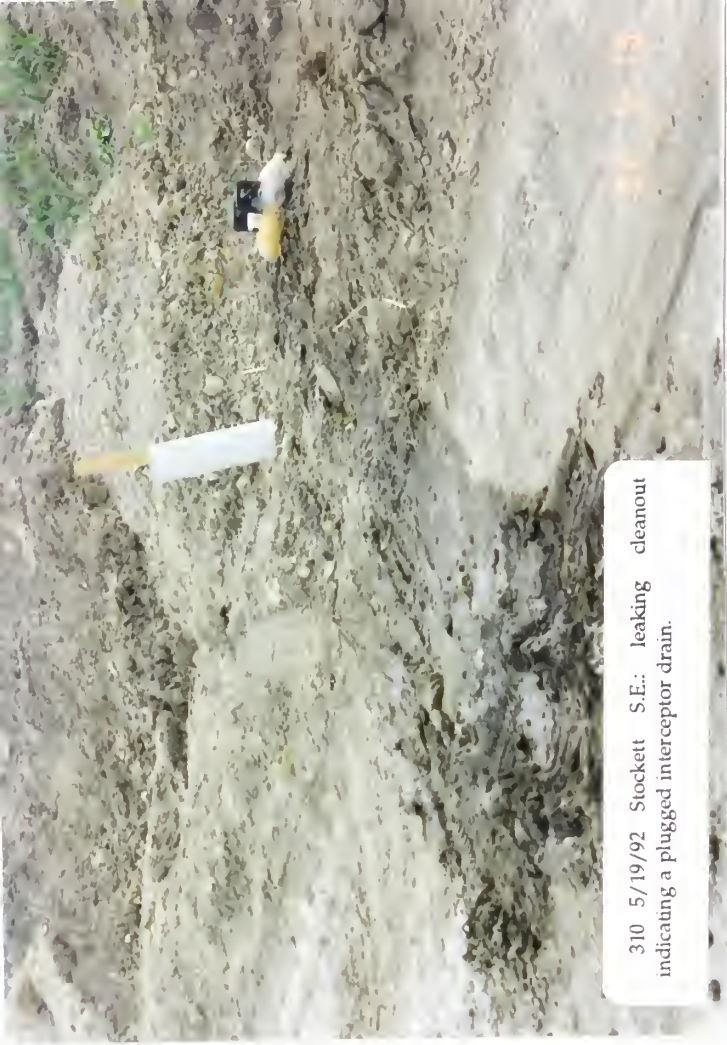


308 5/19/92 Stockett S.E.: repair of southwest interceptor drain. Excavation of old trench to expose geocomposite and pipe.





309 5/19/92 Stockett S.E.: leaking cleanout indicating a plugged interceptor drain.



310 5/19/92 Stockett S.E.: leaking cleanout indicating a plugged interceptor drain.



311 5/19/92 Stockett S.E.: SE limestone trench ready to be covered, bypass line installation on right.

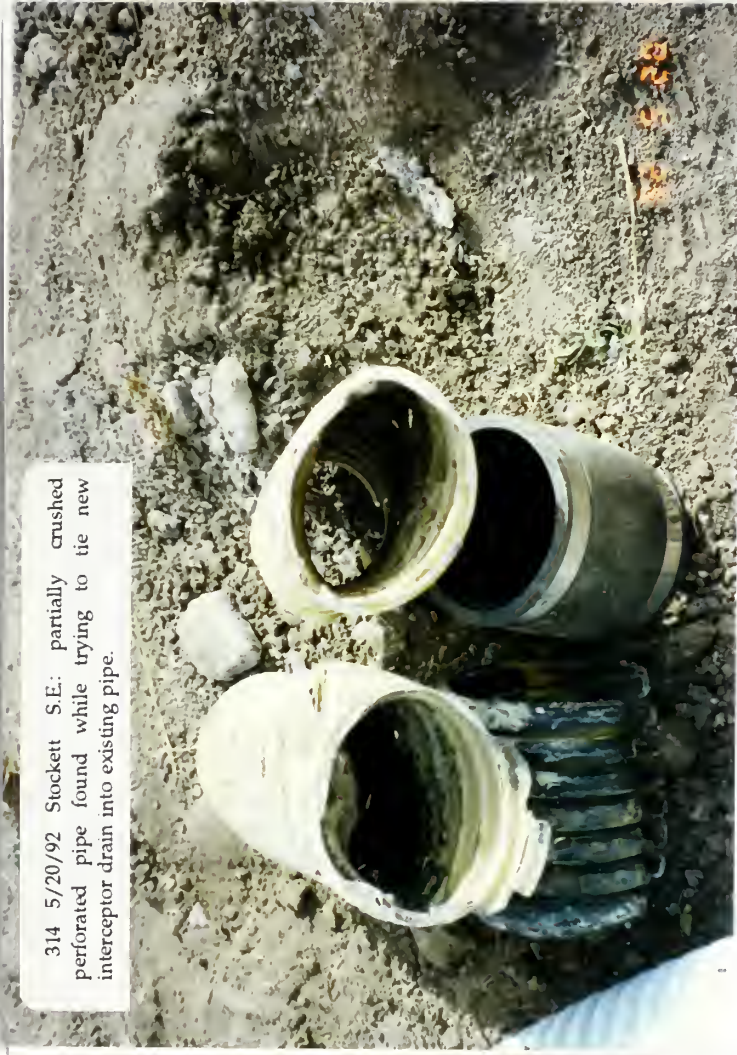


312 5/19/92 Stockett S.E.: exposed geocomposite in southwest interceptor drain. (Note seeping wall not covered by geocomposite.)





313 5/20/92 Stockett S.E.: partially crushed perforated pipe found while trying to tie new interceptor drain into existing pipe.



314 5/20/92 Stockett S.E.: partially crushed perforated pipe found while trying to tie new interceptor drain into existing pipe.

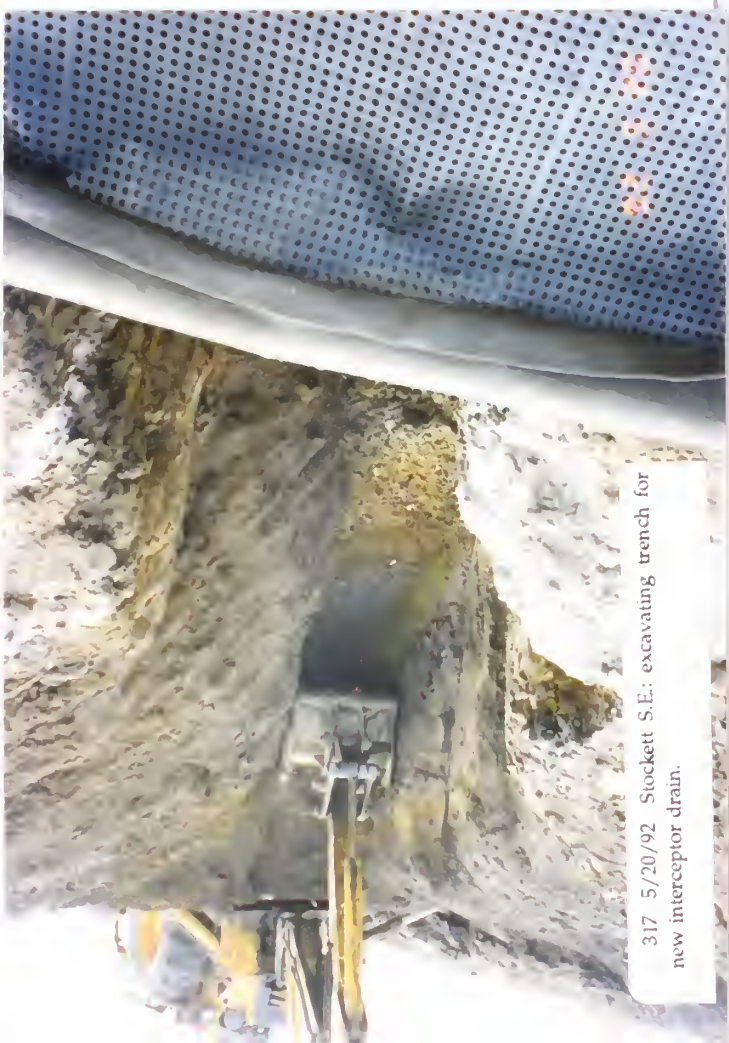


315 5/20/92 Stockett S.E.: geocomposite in place at tie-in for new interceptor drain.



316 5/20/92 Stockett S.E.: geocomposite in place at tie-in for new interceptor drain.





317 5/20/92 Stockett S.E.: excavating trench for new interceptor drain.



318 5/20/92 Stockett S.E.: new interceptor drain installed at seep on north end of project; shows exposed trench wall.



319 5/20/92 Stockett S.E.: backfilling new interceptor drain (3 tiers of geocomposite).



320 5/20/92 Stockett S.E.: SW limestone trench after being graded.



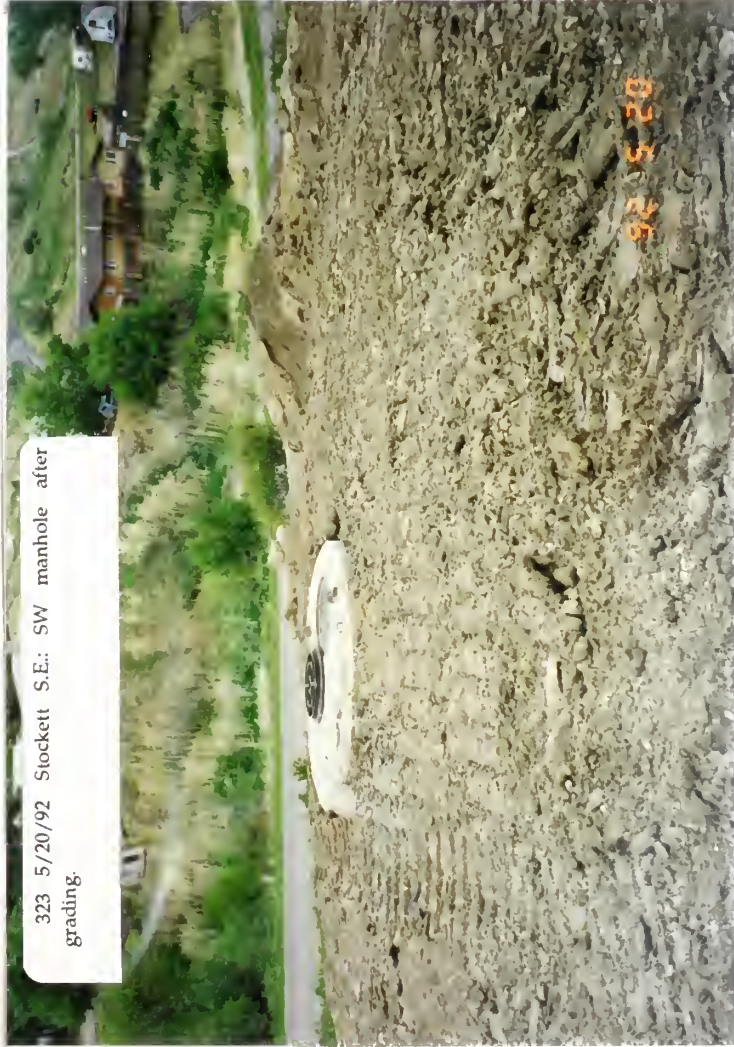
321 5/20/92 Stockett S.E.: SW limestone trench outlet to south wetland channel.



322 5/20/92 Stockett S.E.: west wetland channel looking north. Shows wetland cells filled with peat and limestone aggregate and riprap dikes.



323 5/20/92 Stockett S.E.: SW manhole after grading.

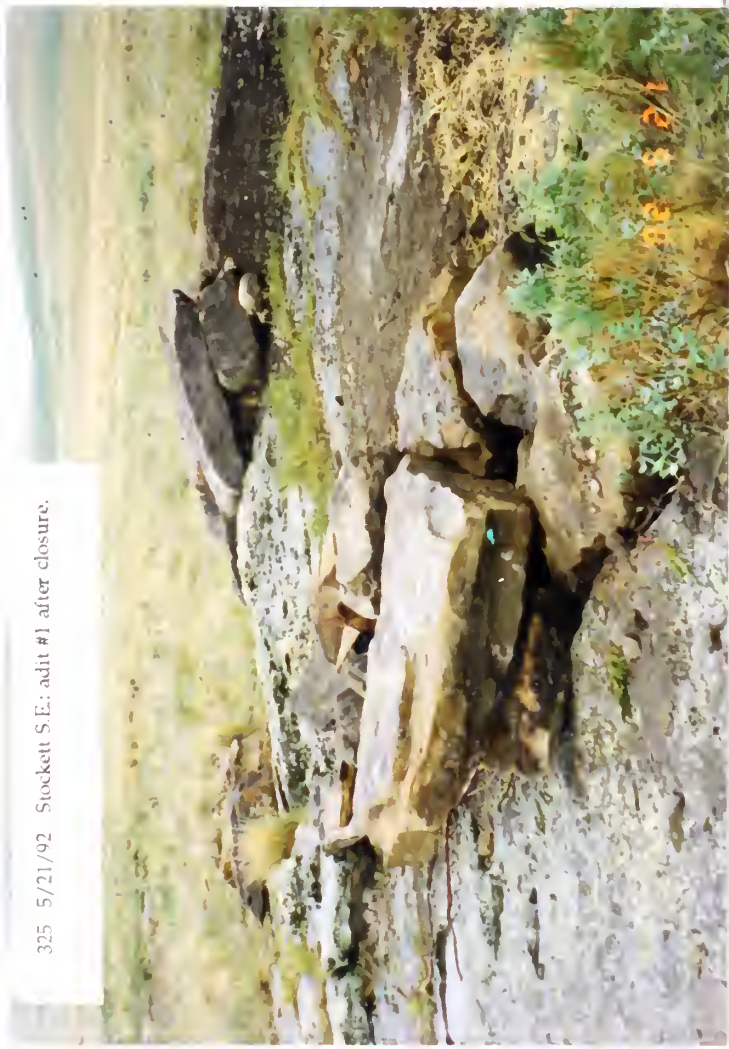


324 5/20/92 Stockett S.E.: liming slope on south west end where interceptor drain was replaced due to crushed pipe.





325 5/21/92 Stockett S.E.; adit #1 after closure.



327 5/21/92 Stockett S.E.; adit #1 after closure  
looking north.



326 5/21/92 Stockett S.E.; adit #1 showing  
opening which needs further closure.



328 5/26/92 Stockett S.E.; geocomposite and  
perforated pipe prefabrication and installation.







329 5/26/92 Stockett S.E.: geocomposite and perforated pipe prefabrication and installation.

92 5 26



330 5/26/92 Stockett S.E.: trench excavation for additional interceptor drain on lower north hill.



331 5/26/92 Stockett S.E.: trench excavation for additional interceptor drain on lower north hill.

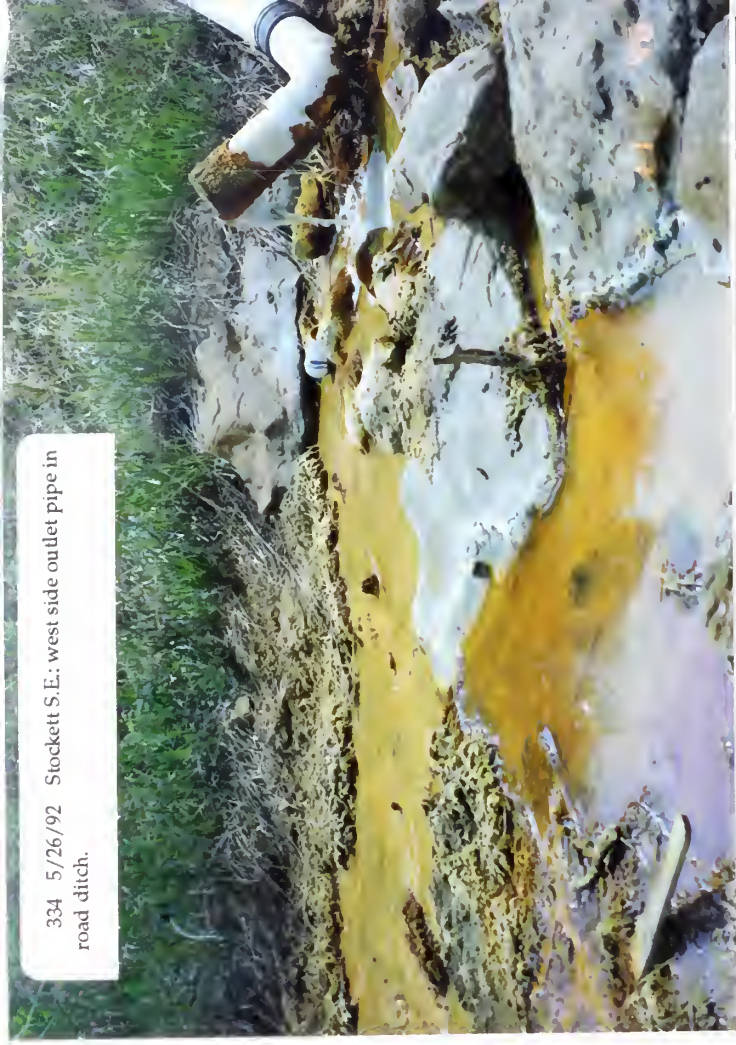
92 5 26



332 5/26/92 Stockett S.E.: sewer snaking at cleanout # 57.



334 5/26/92 Stockett S.E.: west side outlet pipe in road ditch.



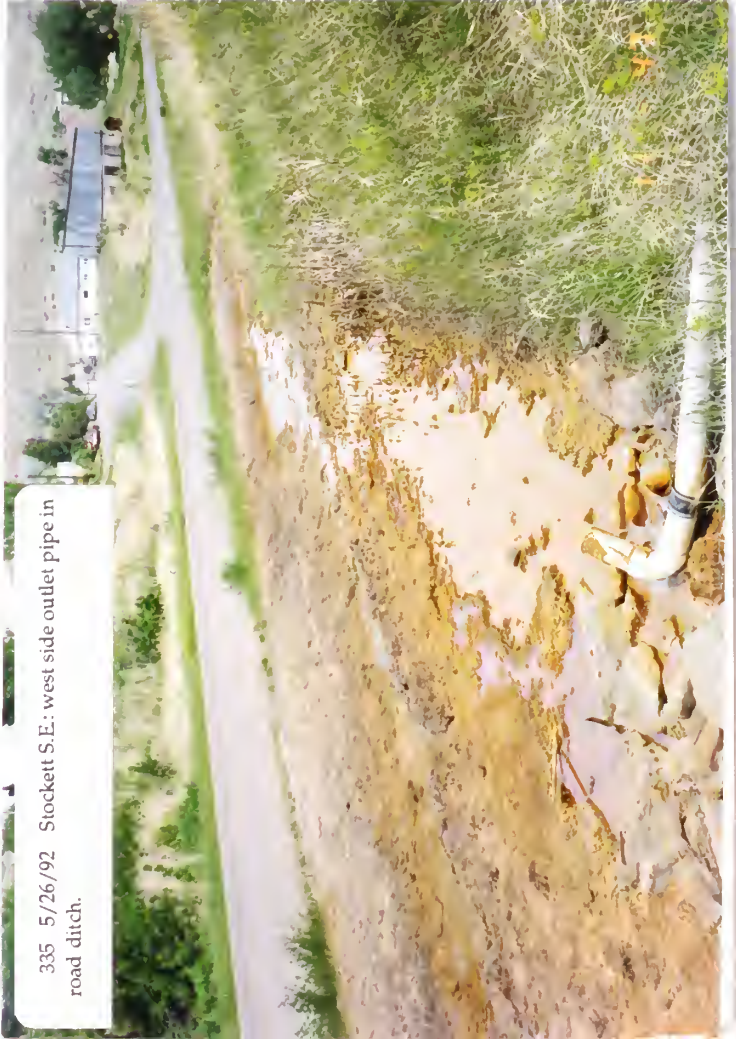
336 5/26/92 Stockett S.E.: west side outlet pipe in road ditch after removal of elbow.



333 5/26/92 Stockett S.E.: two precipitate type extracted during snaking of cleanout # 57.



335 5/26/92 Stockett S.E.: west side outlet pipe in road ditch.





337 5/26/92 Stockett S.E.: trench at tie in location of additional north interceptor drain.



338 5/26/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain.



339 5/26/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain.



340 5/26/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain.

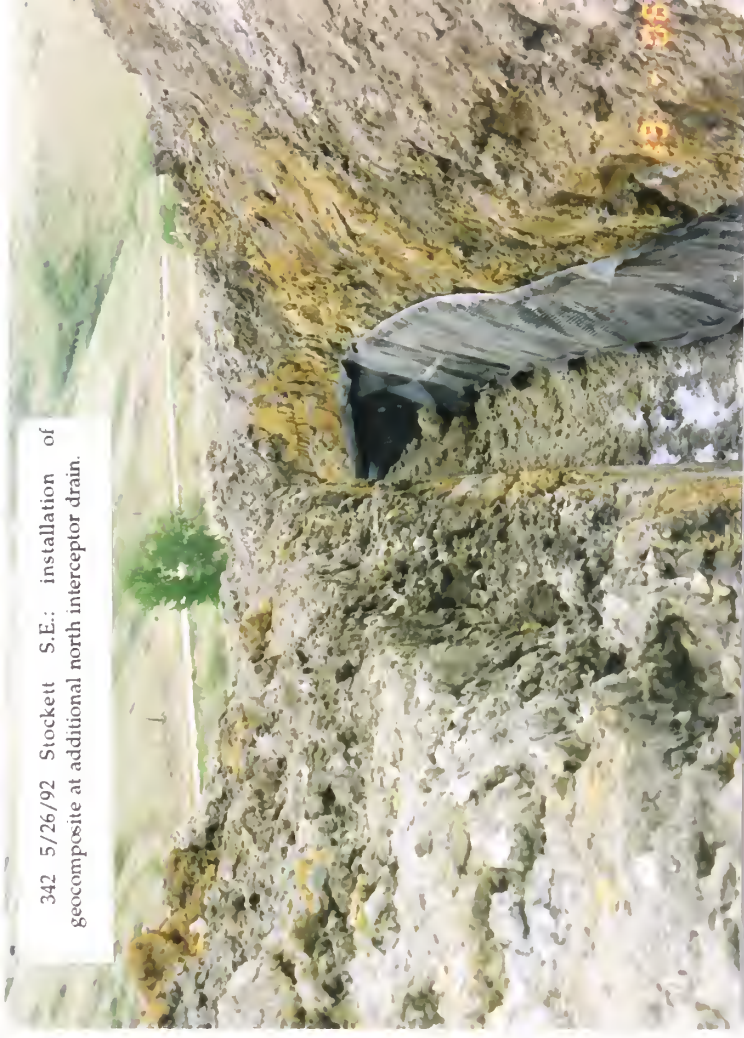




341 5/26/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain.



342 5/26/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain.



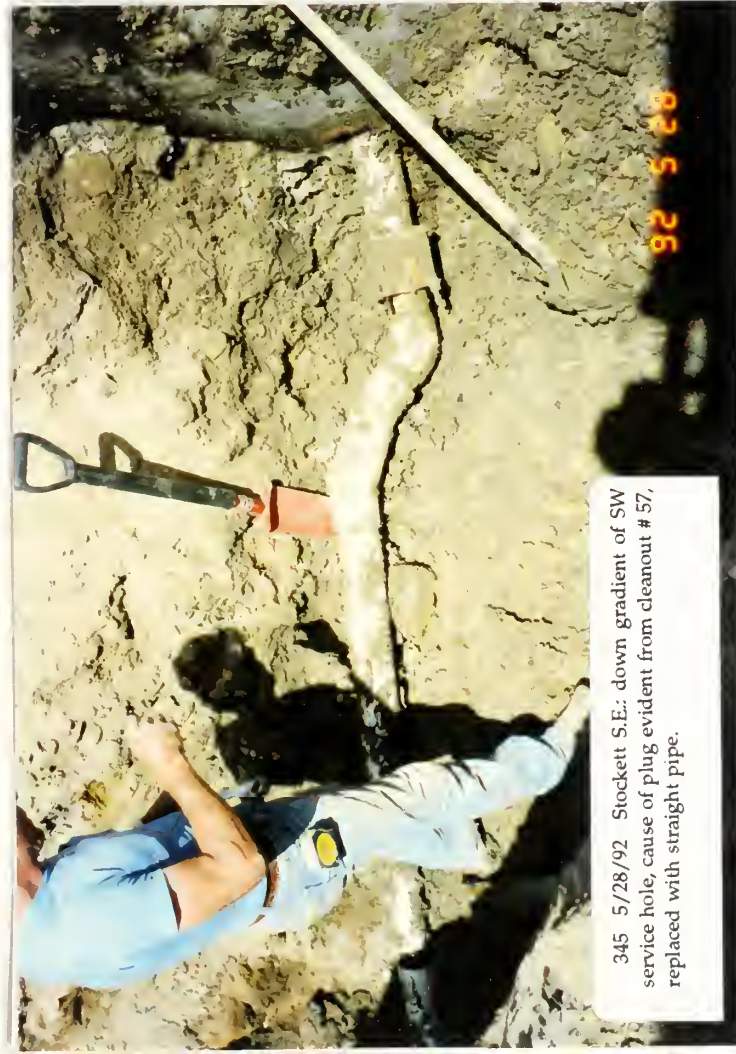
343 5/28/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain, repairing overnight and 5/27/92 weather day collapsed trench.



344 5/28/92 Stockett S.E.: installation of geocomposite at additional north interceptor drain, repairing overnight collapsed trench.







345 5/28/92 Stockett S.E.: down gradient of SW service hole, cause of plug evident from cleanout # 57, replaced with straight pipe.



346 5/28/92 Stockett S.E.: down gradient of SW service hole, cause of plug evident from cleanout # 57, replaced with straight pipe. Note precipitate in pipe.



347 5/28/92 Stockett S.E.: start of excavation to find plug in interceptor drain at SE coulee.



348 5/28/92 Stockett S.E.: start of excavation to find plug in interceptor drain at SE coulee.





349 5/28/92 Stockett S.E.: exposed geocomposite in interceptor drain at SE coulee.



350 5/28/92 Stockett S.E.: closeup of sewer snake end on left and sewer tape end on right.



351 6/01/92 Stockett S.E.: removing spoils pile at confluence of north and south wetland channels.



352 6/01/92 Stockett S.E.: north wetland channel filled with sediment from recent rains, flow bypass line shown.

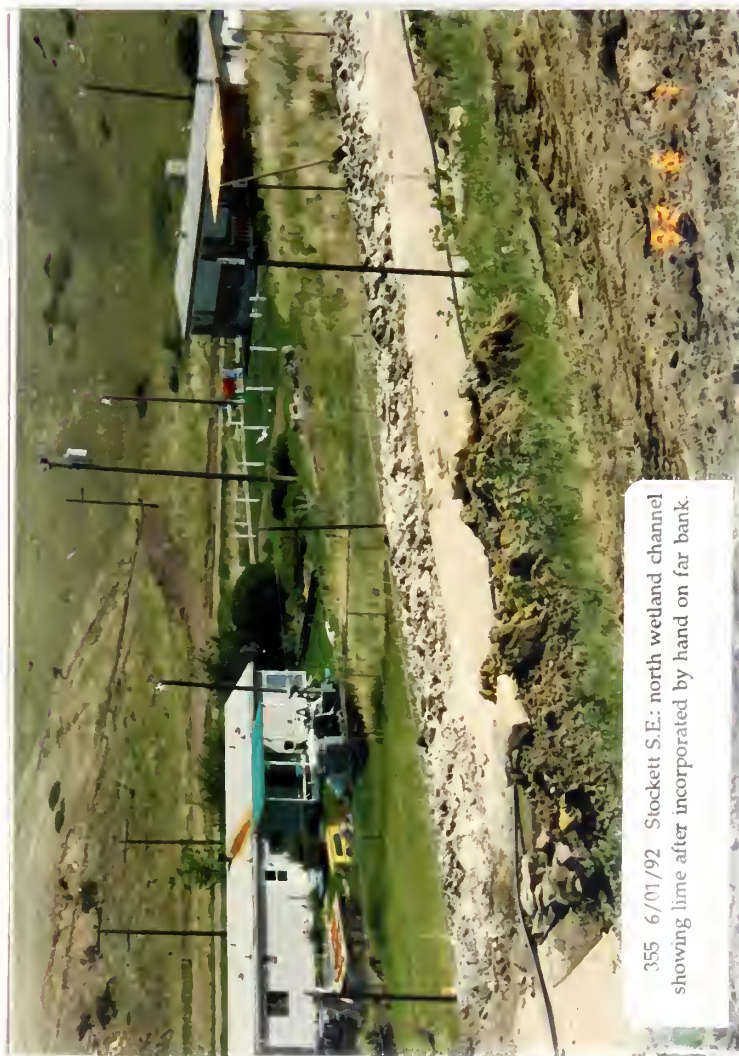




353 6/01/92 Stockett S.E.: north wetland channel filled with sediment from recent rains.



354 6/01/92 Stockett S.E.: north wetland channel near telephone pole showing side slope slumped into channel after recent rain and plugged bypass pipeline.



355 6/01/92 Stockett S.E.: north wetland channel showing lime after incorporated by hand on far bank.



356 6/02/92 Stockett S.E.: view of cleanout #11 prior to replacement of perforated pipe in interceptor drain.





357 6/02/92 Stockett S.E.: excavation near cleanout #11 to expose interceptor drain.



358 6/02/92 Stockett S.E.: top of existing geocomposite exposed near cleanout #11.

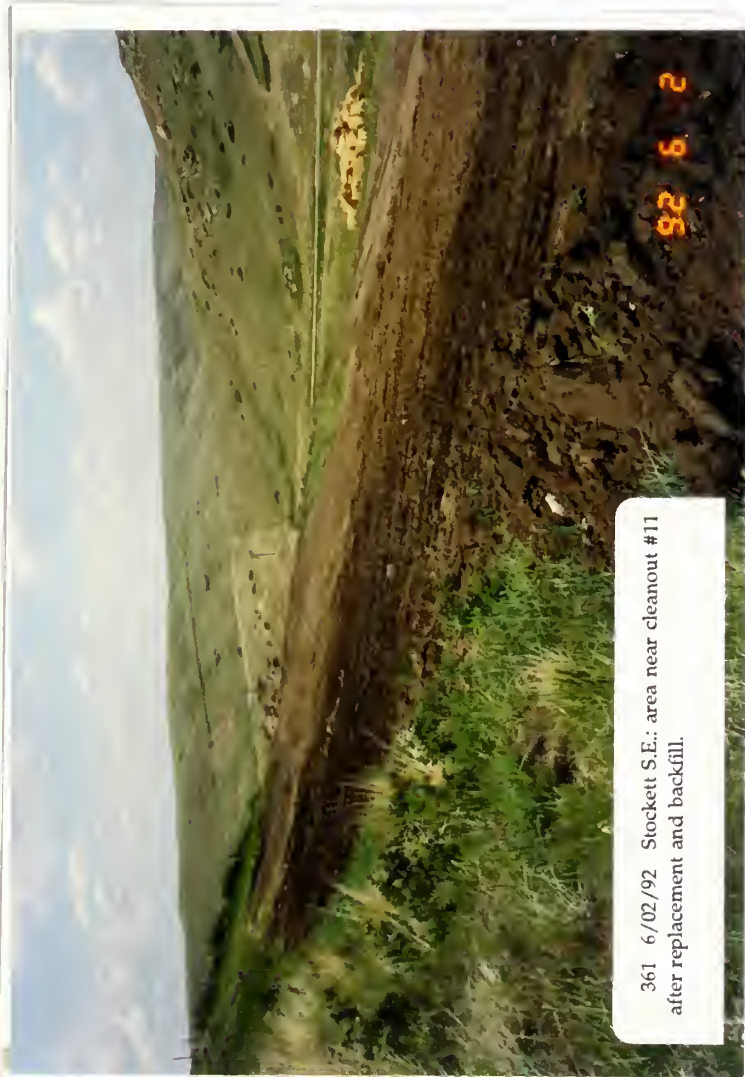


359 6/02/92 Stockett S.E.: crushed perforated pipe being cut out and replaced.



360 6/02/92 Stockett S.E.: perforated pipe and geocomposite replaced near cleanout #11; ready for backfill.





361 6/02/92 Stockett S.E.: area near cleanout #11 after replacement and backfill.



362 6/02/92 Stockett S.E.: geocomposite and PVC pipe near cleanout #9 being exposed for repair and replacement of perforated pipe. Shovel tip is on perforated pipe.

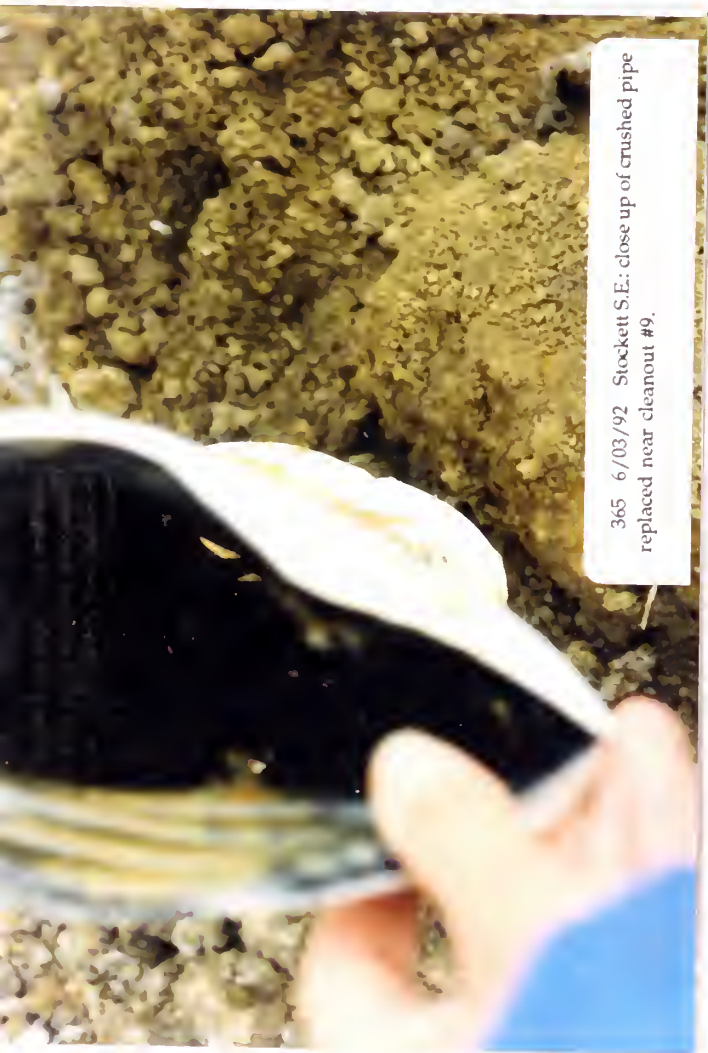


363 6/02/92 Stockett S.E.: crushed perforated pipe exposed and being removed and replaced near cleanout #9. Clay clod backfill likely culprit.



364 6/03/92 Stockett S.E.: crushed perforated pipe exposed and being removed and replaced near cleanout #9.





365 6/03/92 Stockett S.E.: close up of crushed pipe replaced near cleanout #9.



366 6/03/92 Stockett S.E.: close up of crushed pipe replaced near cleanout #9.

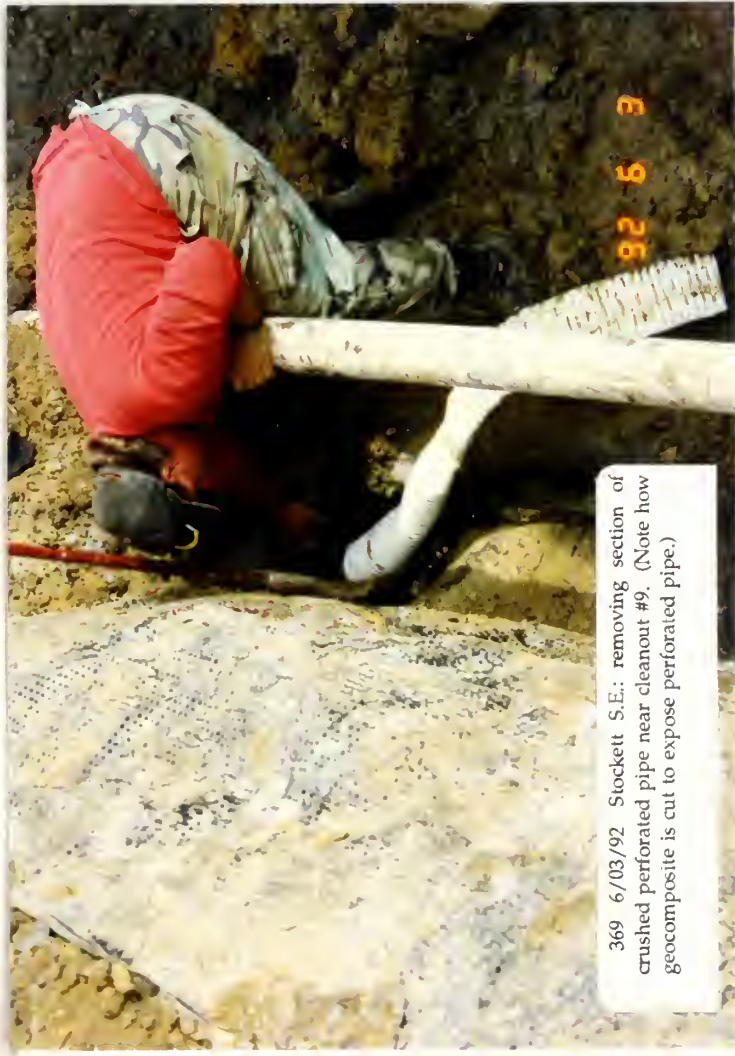


367 6/03/92 Stockett S.E.: uncovering section of crushed perforated pipe by hand at cleanout #9. Adjacent solid PVC line is from the SE Coulee interceptor drain source.



368 6/03/92 Stockett S.E.: removing section of crushed perforated pipe near cleanout #9. (Note how geocomposite is cut to expose perforated pipe.)





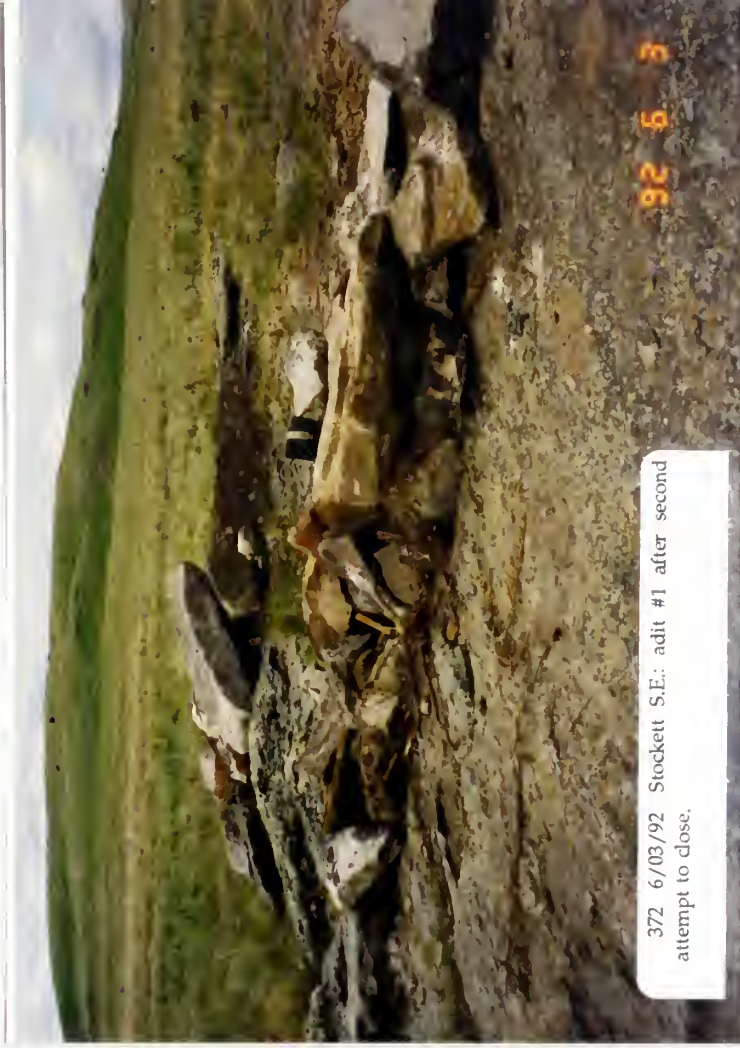
369 6/03/92 Stockett S.E.: removing section of crushed perforated pipe near cleanout #9. (Note how geocomposite is cut to expose perforated pipe.)



370 6/03/92 Stockett S.E.: placing geocomposite patch around replaced section of crushed perforated pipe near cleanout #9. (Note replaced perforated pipe is black.)



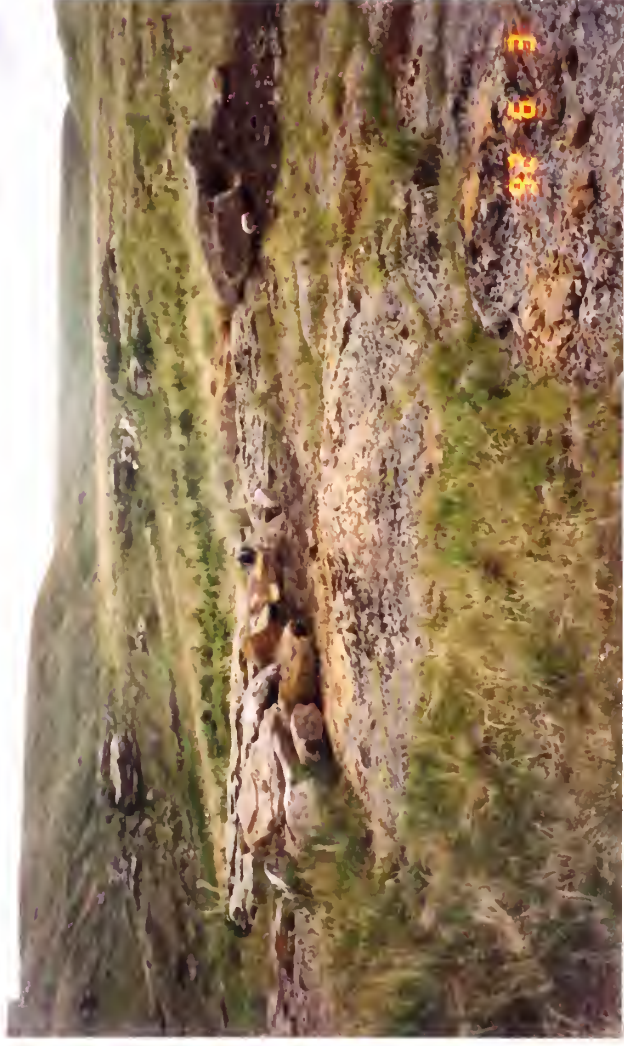
371 6/03/92 Stockett S.E.: placing geocomposite patch around replaced section of crushed perforated pipe near cleanout #9. (Note replaced perforated pipe is black.)



372 6/03/92 Stockett S.E.: adit #1 after second attempt to close.



373 6/03/92 Stockett S.E.: adit #1 after all openings adequately closed.



375 6/03/92 Centerville C site: 2 of 2 panorama of site from north to south. Shows cell 3 and most of cell 2.



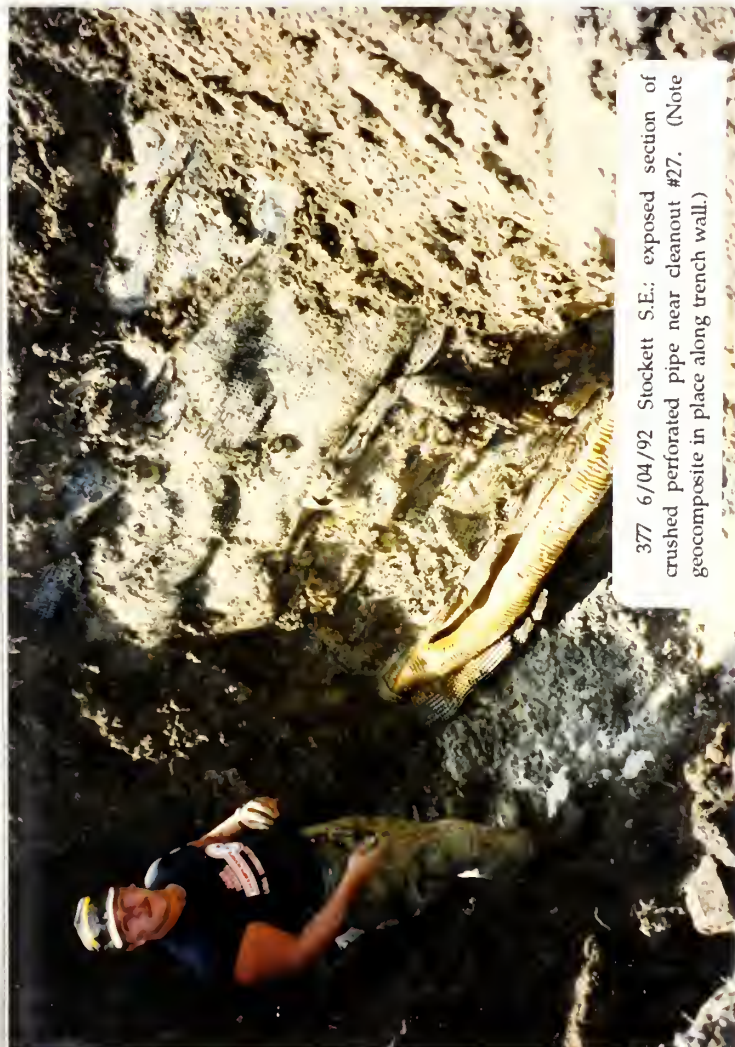
374 6/03/92 Centerville C site: 1 of 2 panorama of site from north to south. Shows stilling basin filled with water and sediment. Sediment was removed later.



376 6/04/92 Stockett S.E.: cutting geocomposite material to expose crushed perforated pipe near cleanout #27.







377 6/04/92 Stockett S.E.: exposed section of crushed perforated pipe near cleanout #27. (Note geocomposite in place along trench wall.)



378 6/04/92 Stockett S.E.: crushed sections of perforated pipe (2' and 5') replaced near cleanout #7. Backfill method and type suspect in crushing problem.



379 6/04/92 Stockett S.E. showing perforated pipe prior to placing crushed pipe section to check for additional blockage. Additional blockage found approximately 30 feet down adjacent.



380 6/04/92 Stockett S.E.: placing geocomposite patch around replaced perforated pipe (black).





381 6/04/92 Stockett S.E.: backfilling replaced section of interceptor drain near cleanout #27.



382 6/04/92 Stockett S.E.: placing geocomposite patch around replaced perforated pipe (2') near cleanout #28.



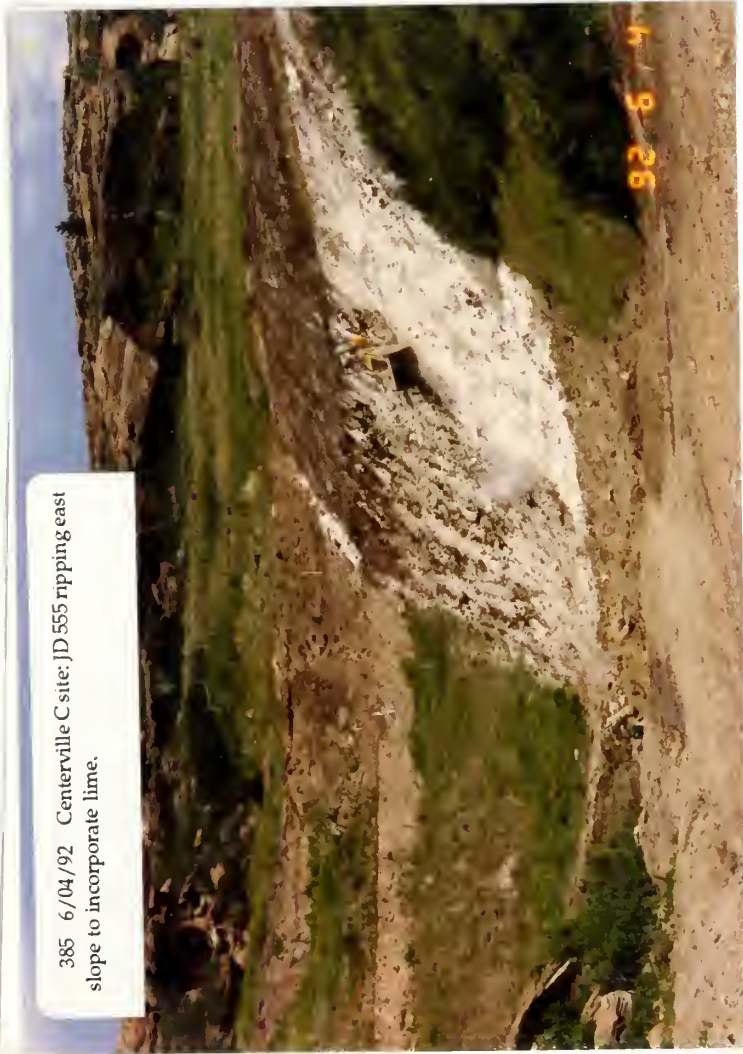
383 6/04/92 Centerville C site: JD 555 with rippers lowered preparing to go down steep east slope to incorporate lime.



384 6/04/92 Centerville C site: JD 555 ripping east slope to incorporate lime.



385 6/04/92 Centerville C site: JD 555 ripping east slope to incorporate lime.



386 6/04/92 Centerville C site: east slope after one pass with rippers. Slope was ripped again to better incorporate lime.



387 6/04/92 Centerville C site: terrace on east slope (location of interceptor drain #3) after liming and prior to final grading.



388 6/08/92 Centerville C site: cattails in cell 3 (planted 5/01/92) showing poor cattail growth compared to cell 1.







389 6/08/92 Centerville C site: cattails in cell 3 (planted 5/01/92). Floating green scum on surface.



390 6/08/92 Centerville C site: cattails in cell 1 (planted 5/01/92) showing good cattail growth (green tops) compared to cell 3.



391 6/08/92 Stockett S.E.: exposed geocomposite and perforated pipe near cleanout #27.



392 6/08/92 Stockett S.E.: inserting sewer tape in pipe to check for additional blockage prior to replacing crushed perforated pipe.





393 6/08/92 Stockett S.E.: crushed perforated pipe removed from interceptor drain near cleanout #27.



394 6/08/92 Stockett S.E.: crushed perforated pipe removed from interceptor drain near cleanout #27. Clay clods and rock backfill culprit.



395 6/08/92 Stockett S.E.: excavating second location near cleanout #28.

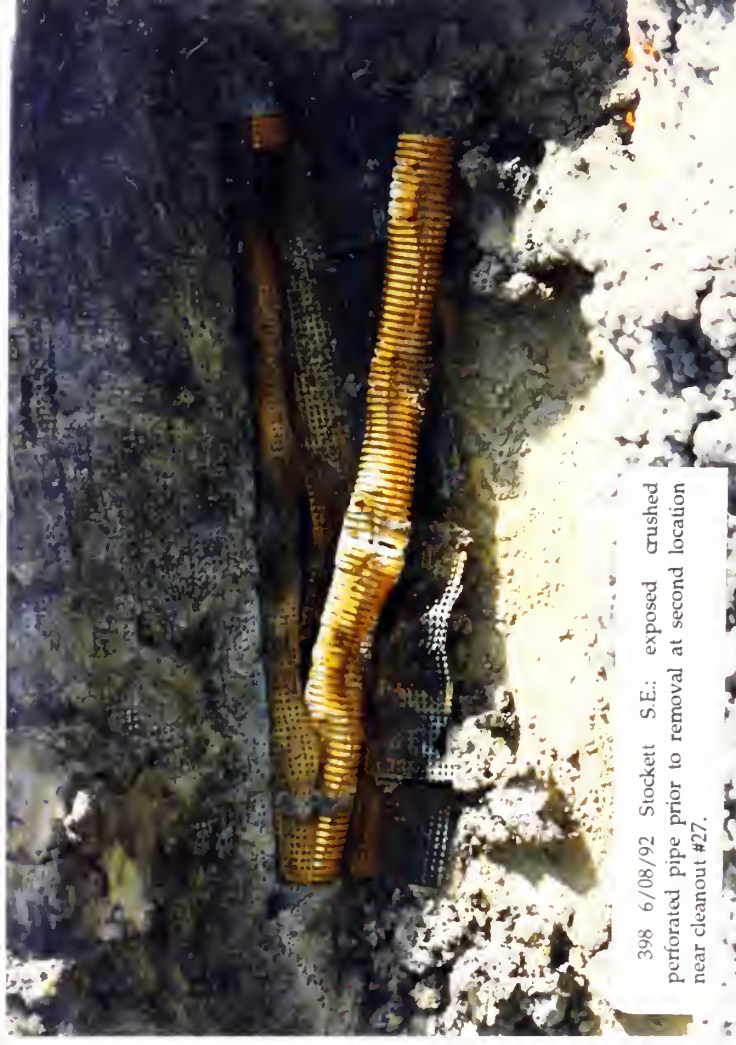


396 6/08/92 Stockett S.E.: exposed crushed perforated pipe prior to removal near cleanout #28.





397 6/08/92 Stockett S.E.: excavating a second location near cleanout #27.



398 6/08/92 Stockett S.E.: exposed crushed perforated pipe prior to removal at second location near cleanout #27.



399 6/08/92 Stockett S.E.: close up of crushed perforated pipe from previous photo.



400 6/08/92 Stockett S.E.: close up of crushed perforated pipe from previous photo.

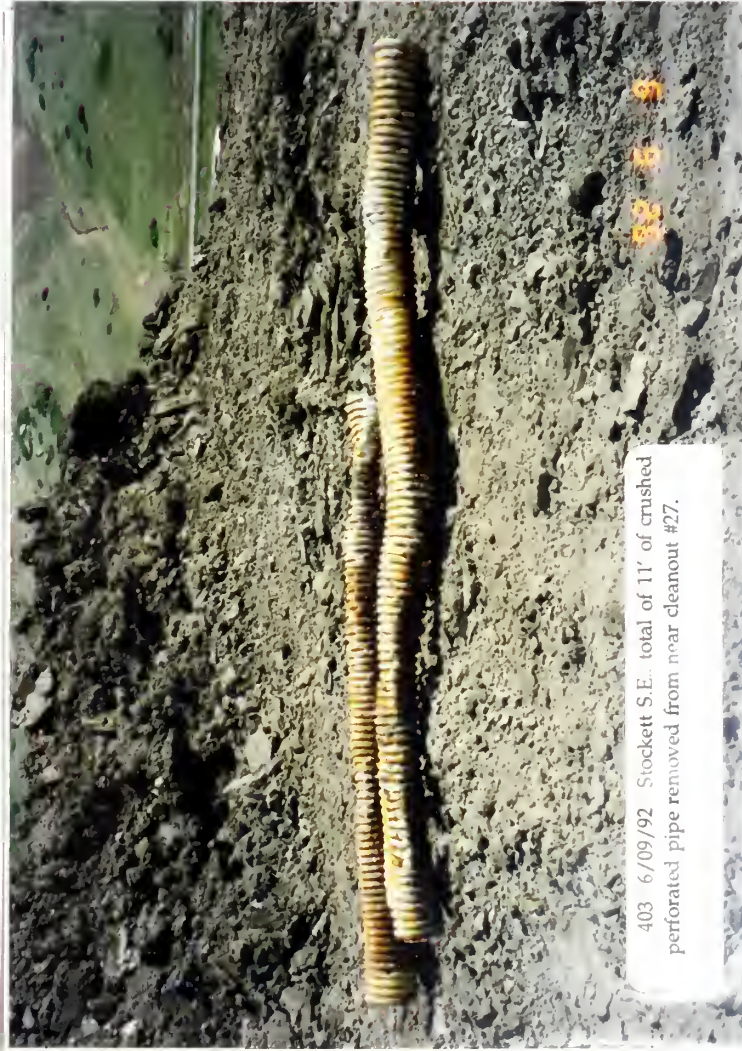




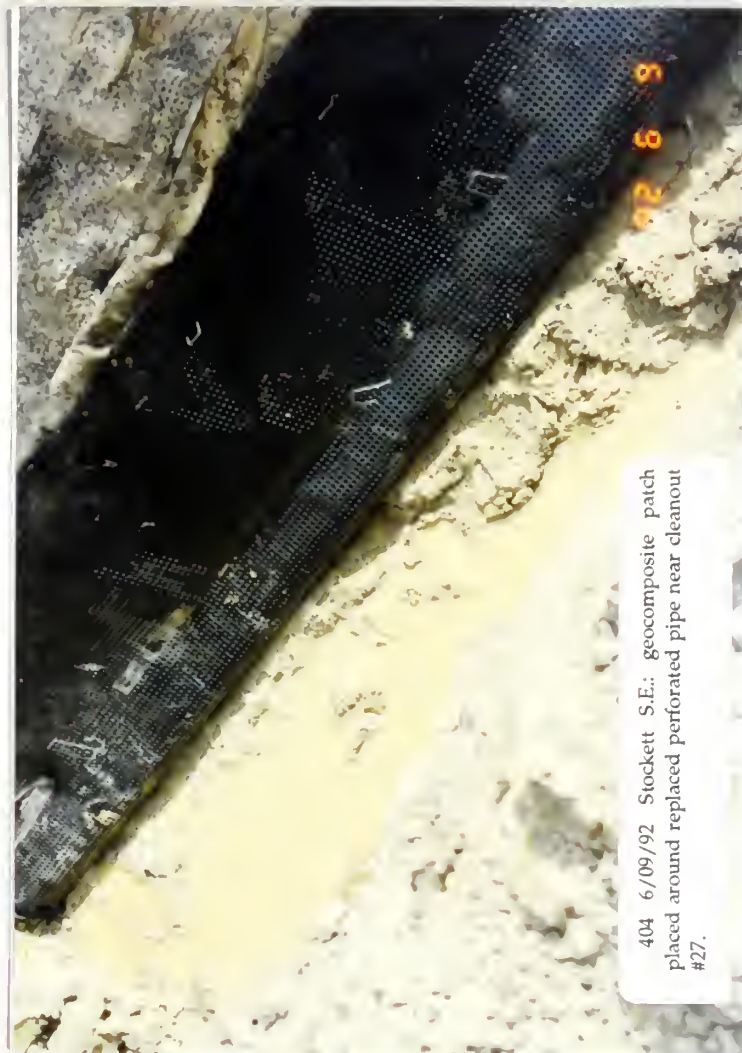
401 6/08/92 Stockett S.E.: exposed interceptor drain at second location near cleanout #27 prior to replacement. Another section of crushed pipe was discovered 4 feet from end of pipe.



402 6/08/92 Stockett S.E.: additional crushed perforated pipe near cleanout #27.



403 6/09/92 Stockett S.E.: total of 11' of crushed perforated pipe removed from near cleanout #27.



404 6/09/92 Stockett S.E.: geocomposite patch placed around replaced perforated pipe near cleanout #27.





406 6/09/92 Stockett S.E.: excavation to expose crushed perforated pipe near cleanout #26.



408 6/09/92 Stockett S.E.: head of sewer tape used to snake perforated pipe to locate pipe blockages.

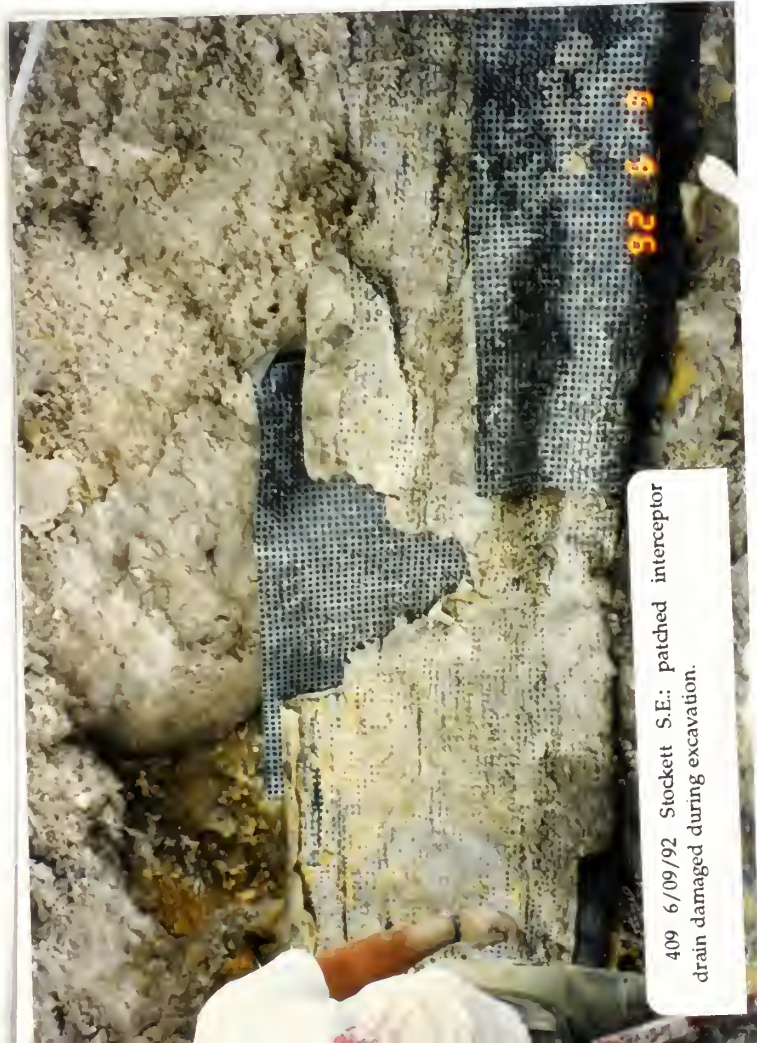


405 6/09/92 Stockett S.E.: backfill repaired interceptor drain near cleanout #27. Note clay backfill.

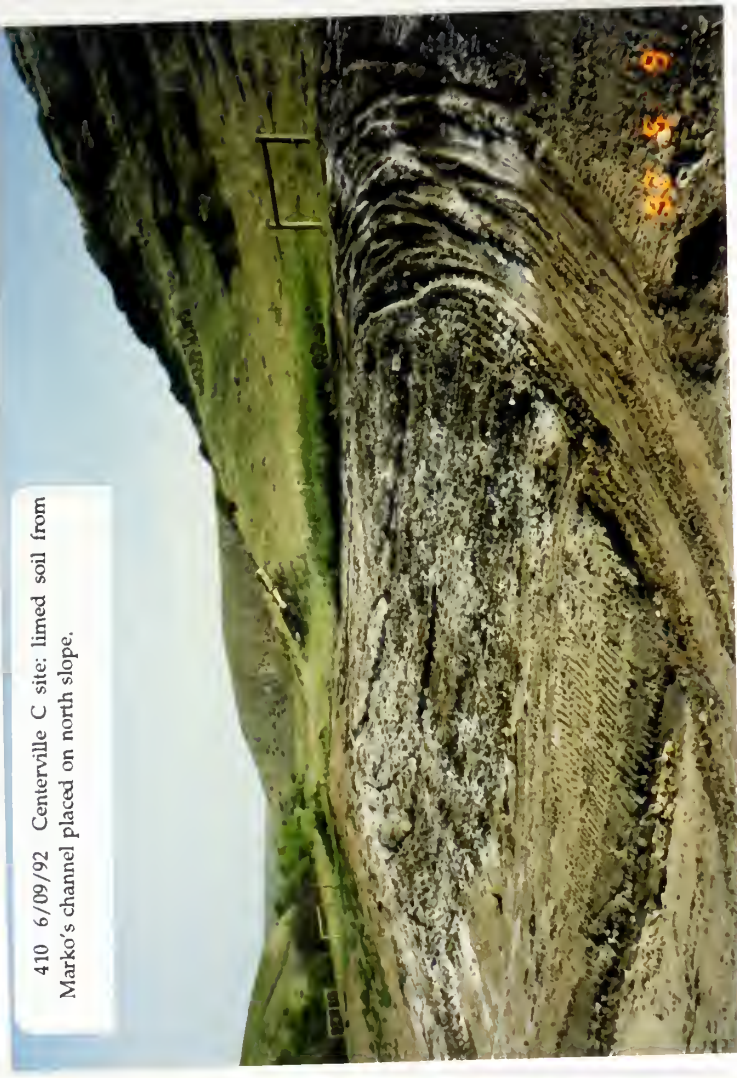


407 6/09/92 Stockett S.E.: replaced 4' section of perforated pipe and geocomposite patch near cleanout #26.





409 6/09/92 Stockett S.E.: patched interceptor drain damaged during excavation.



410 6/09/92 Centerville C site: limed soil from Marko's channel placed on north slope.



411 6/09/92 Centerville C site: limed east slope prior to coversoil placement.



412 6/09/92 Centerville C site: east slope during coversoil placement. Coversoil was pushed upslope from base and down from terrace using D-7 dozer.





413 6/09/92 Centerville C site: spreading coversoil on east slope using D-7 dozer. Note JD 555 loader transporting coversoil to terrace.

414 6/10/92 Stockett S.E.: exposed geocomposite and perforated pipe at second location near cleanout #26. Both perforated pipe and geocomposite were crushed.



415 6/10/92 Stockett S.E.: crushed perforated pipe removed near cleanout #26. Backfill suspect.



416 6/10/92 Stockett S.E.: patched geocomposite near cleanout #21 after replacing 1.5' of crushed perforated pipe.





417 6/10/92 Stockett S.E.: exposing interceptor drain near cleanout #38. Water is from plugged perforated pipe.



418 6/10/92 Stockett S.E.: crushed perforated pipe to be removed near cleanout #38.



419 6/10/92 Stockett S.E. trench wall showing exposed interceptor drain near cleanout #38.



420 6/10/92 Stockett S.E.: crushed perforated pipe (rock on pipe during backfill) removed from near cleanout #38. Pipe was partially filled with orange silt shown on right.





421 6/10/92 Centerville C site: east slope prepared for placement of erosion control mat.



422 6/10/92 Centerville C site: east slope prepared for placement of erosion control mat.



423 6/11/92 Centerville C site: east slope prepared for placement of erosion control mat.



424 6/11/92 Centerville C site: 1 of 2 panorama of site. Limed soils on north slope. Looking toward Marko's property (west).





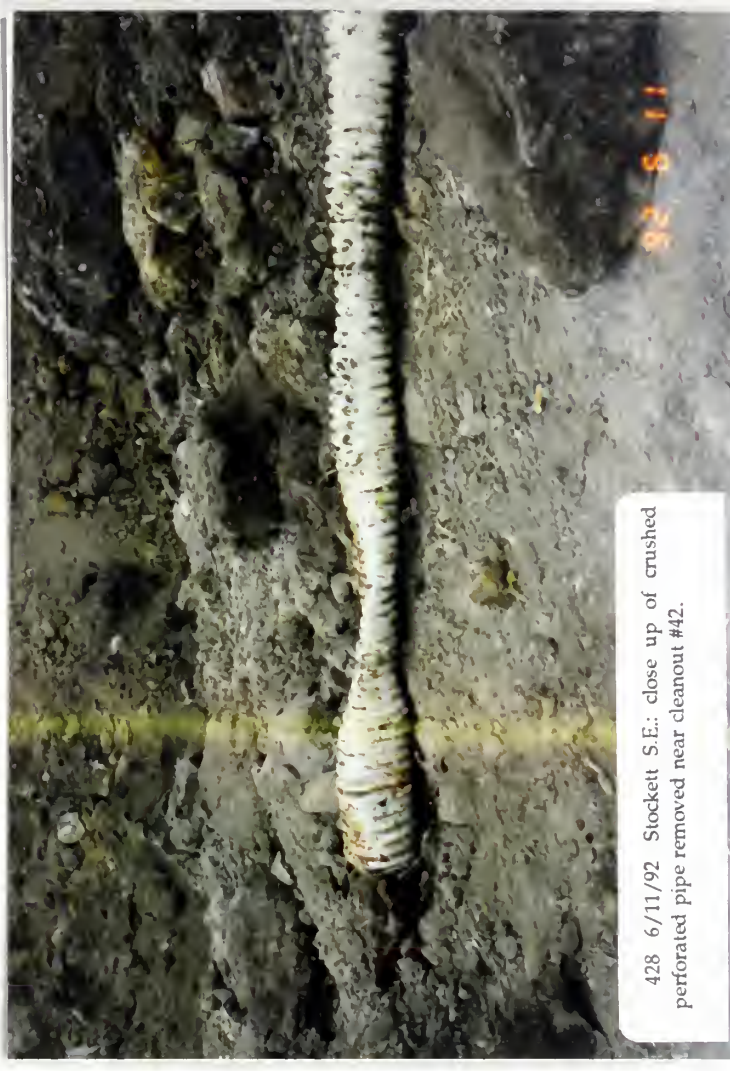
425 6/11/92 Centerville C site: 2 of 2 panorama of site. Note culvert on right, stock tank in far center and cell 3 on far left.



426 6/11/92 Stockett S.E.: crushed perforated pipe being removed near cleanout #42.

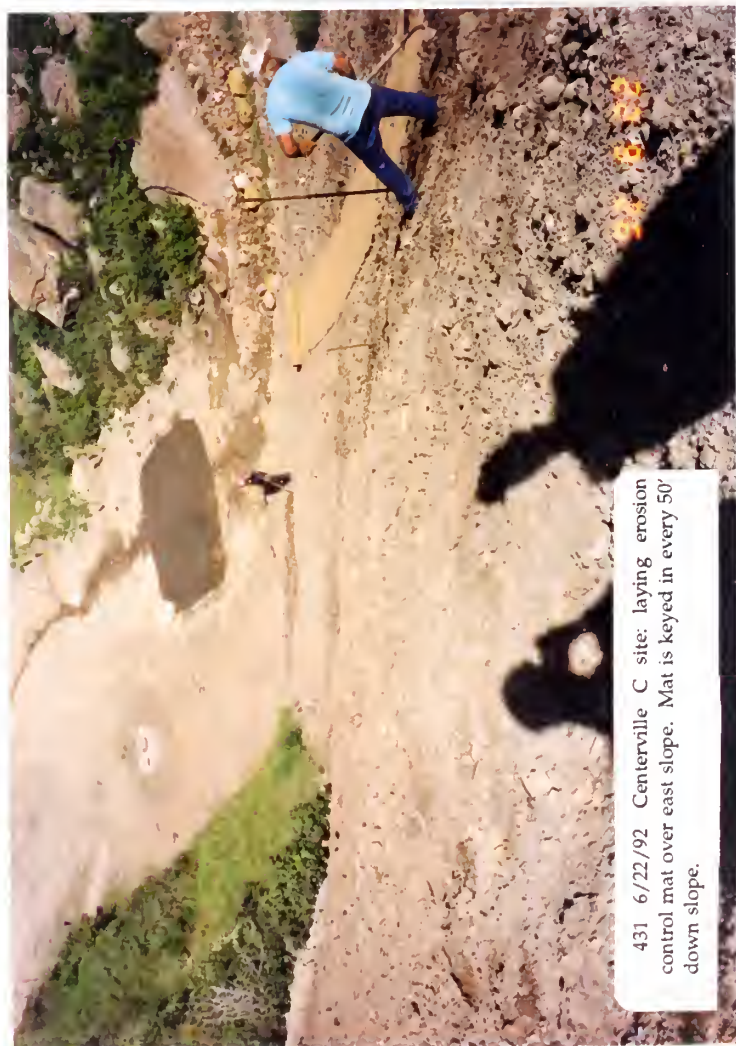
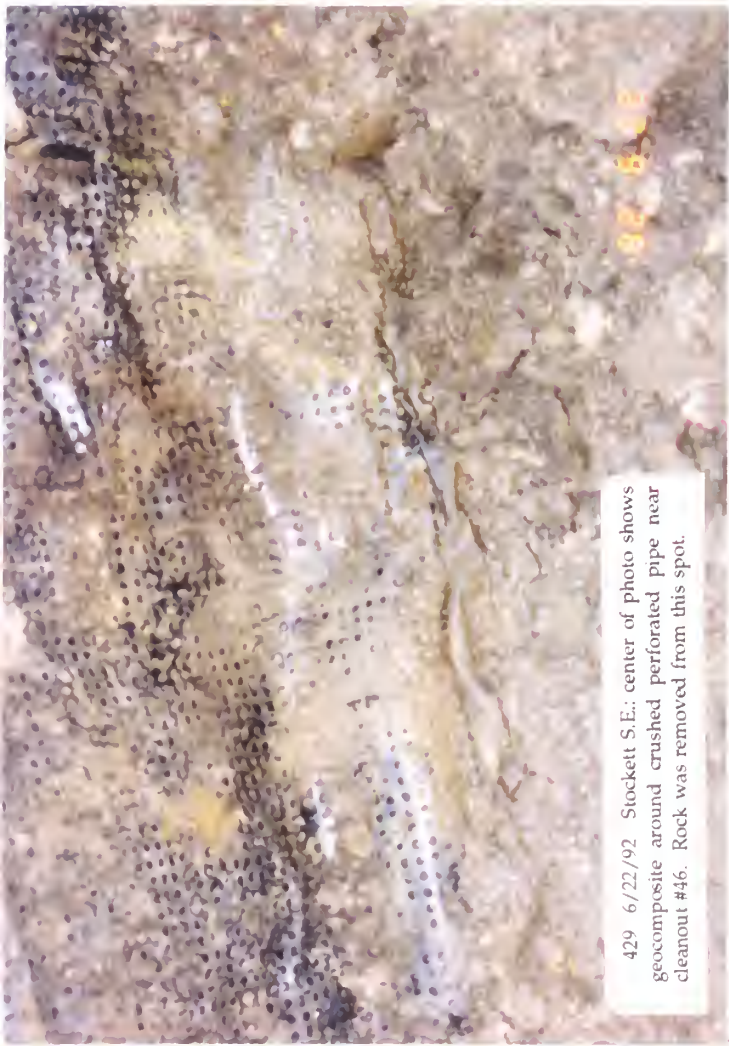


427 6/11/92 Stockett S.E.: crushed perforated pipe being removed near cleanout #42.



428 6/11/92 Stockett S.E.: close up of crushed perforated pipe removed near cleanout #42.





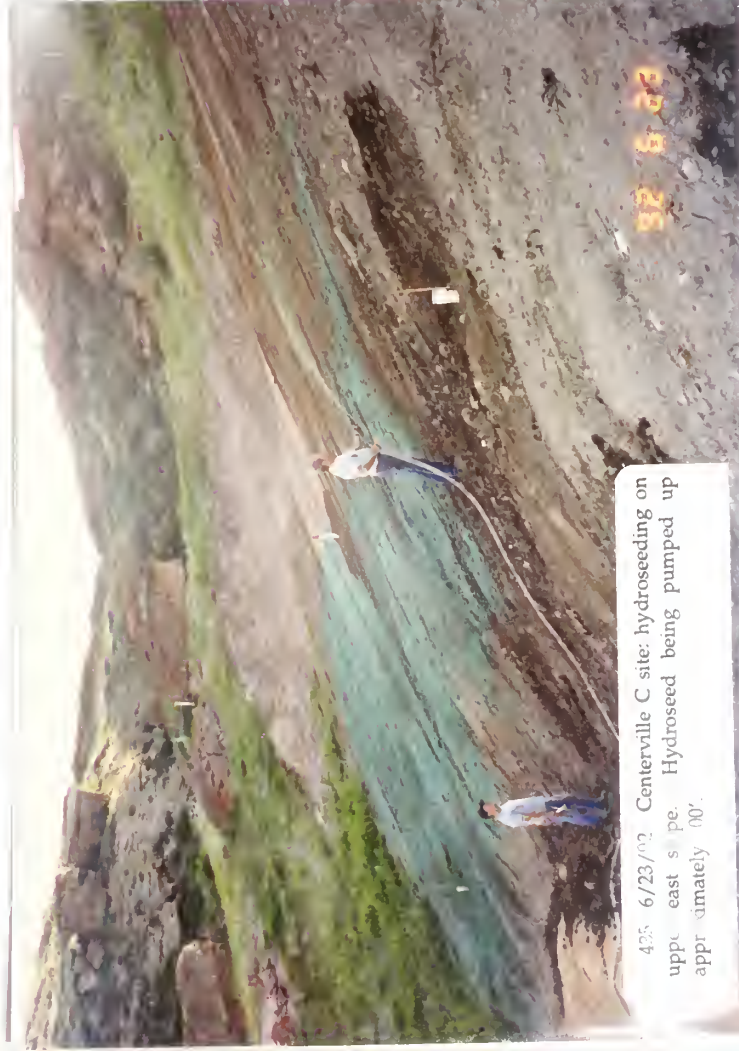




433 6/22/92 Centerville C site: key trench on terrace at top of east slope.



434 6/22/92 Centerville C site: laying erosion control mat on east slope. Mat is keyed in at top of slope and every 50' downslope.



435 6/23/92 Centerville C site: hydroseeding on upper east slope. Hydroseed being pumped up approximately 100'.

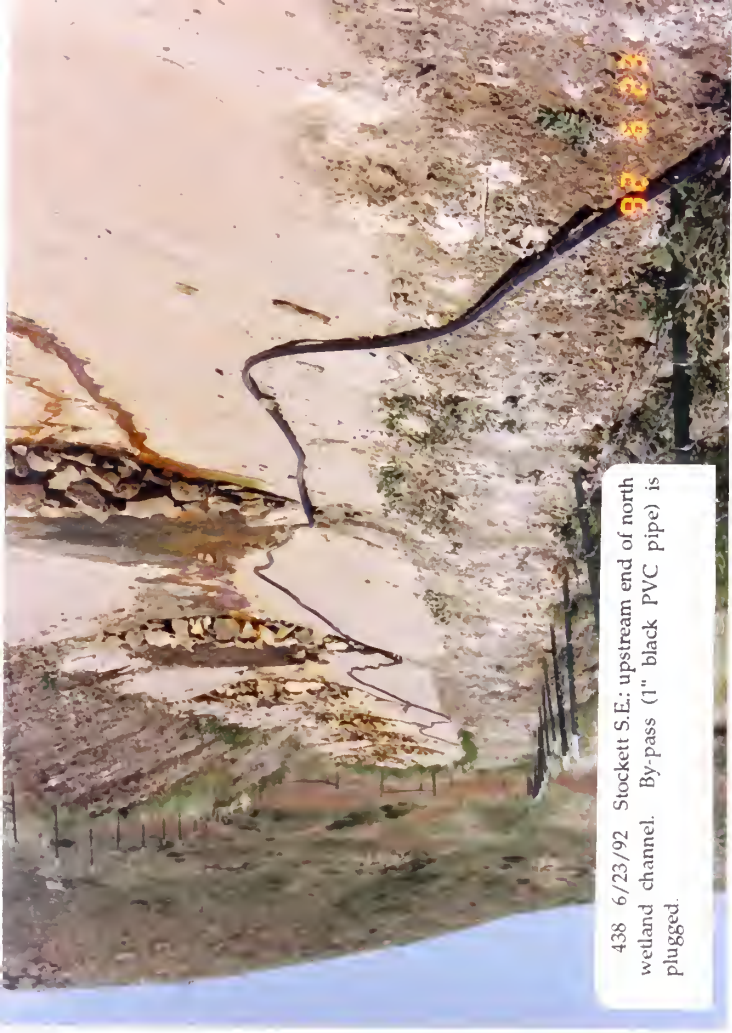


436 6/23/92 Stockett S.E.: slumped area near north wetland channel after reshaping and liming.

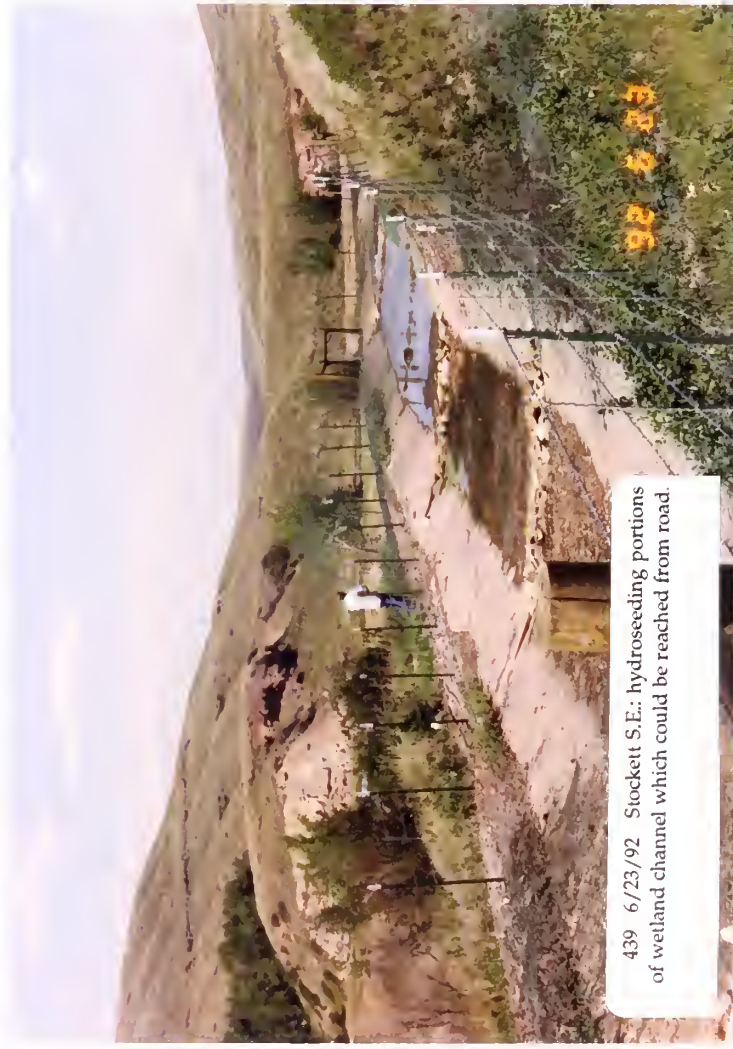




437 6/23/92 Stockett S.E.: looking upstream at north wetland channel from previous photo. Acid water in channel is leaking from inlet to channel because temporary by-pass is plugged.



438 6/23/92 Stockett S.E.: upstream end of north wetland channel. By-pass (1" black PVC pipe) is plugged.



439 6/23/92 Stockett S.E.: hydroseding portions of wetland channel which could be reached from road.

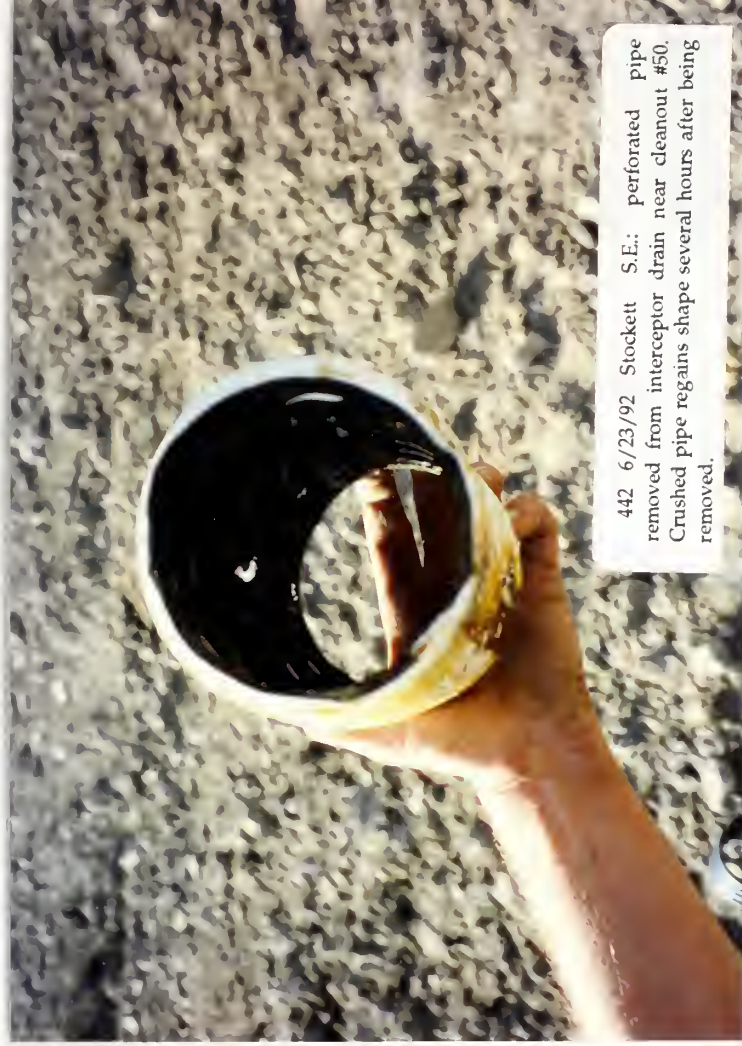


440 6/23/92 Stockett S.E.: hydroseding portions of wetland channel which could be reached from road.





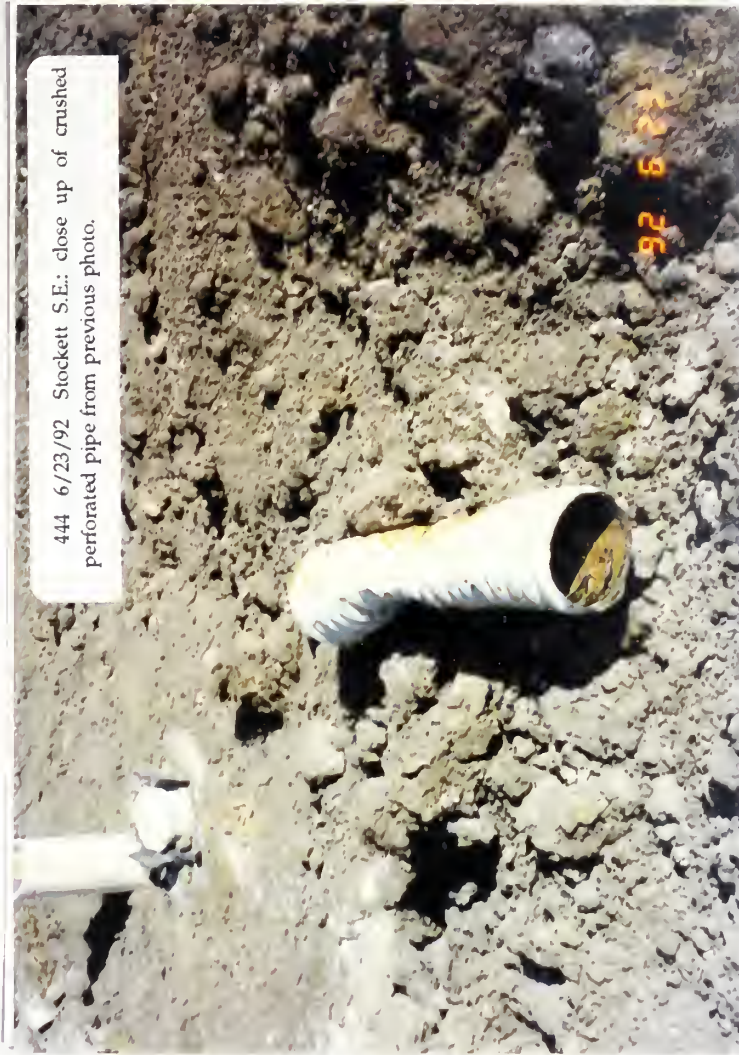
441 6/23/92 Stockett S.E.: exposing crushed perforated pipe near cleanout #50.



442 6/23/92 Stockett S.E.: perforated pipe removed from interceptor drain near cleanout #50. Crushed pipe regains shape several hours after being removed.



443 6/23/92 Stockett S.E.: geocomposite cut back to expose crushed perforated pipe at second location near cleanout #50.



444 6/23/92 Stockett S.E.: close up of crushed perforated pipe from previous photo.





446 6/23/92 Stockett S.E.: geocomposite cut back to expose crushed perforated pipe near cleanout #51.



448 6/23/92 Stockett S.E.: geocomposite cut back to expose crushed perforated pipe at second location near cleanout #51.



445 6/23/92 Stockett S.E.: geocomposite cut back to expose crushed perforated pipe near cleanout #51.



447 6/23/92 Stockett S.E.: close up of removed crushed perforated pipe from near cleanout #51.

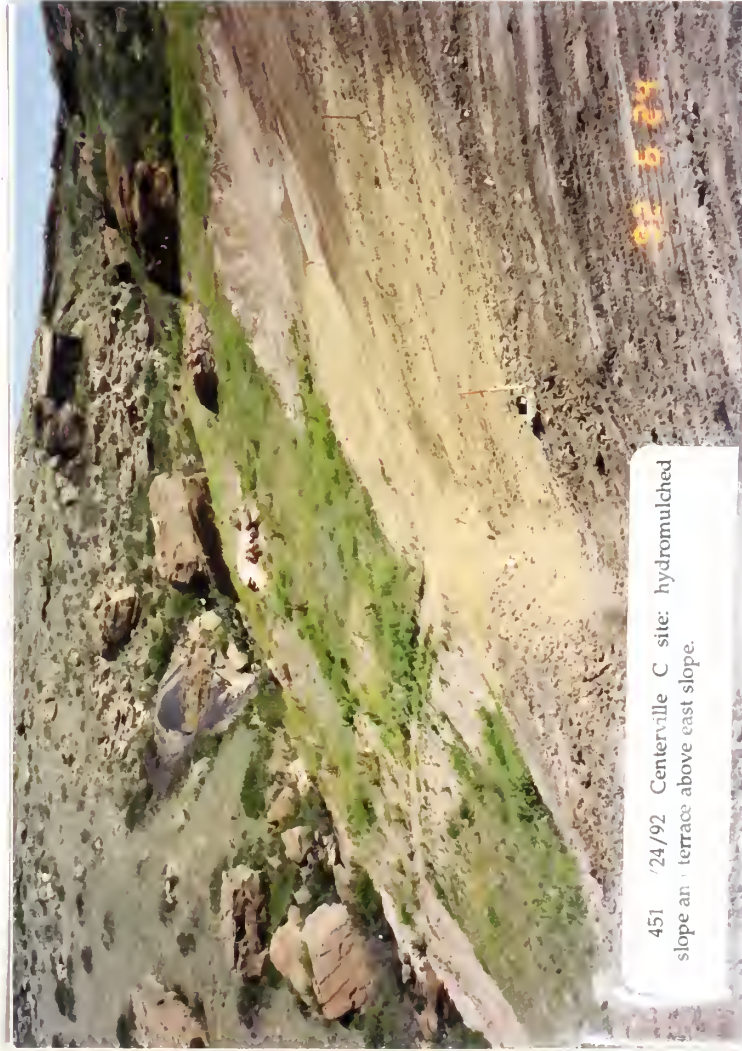




449 6/24/92 Stockett S.E.: close up of crushed perforated pipe removed from near cleanout #27.



450 6/24/92 Stockett S.E.: close up of crushed perforated pipe removed from near cleanout #27. This pipe has already been replaced once. During previous backfill, material was dropped on pipe instead of careful placement.



451 6/24/92 Centerville C site: hydromulched slope and terrace above east slope.



452 6/24/92 Centerville C site: view down east slope from terrace. Hydroseed was sprayed on top of erosion control mat as recommended by the manufacturer.





453 6/24/92 Centerville C site: view from terrace of east slope of hydromulched areas in channel, on Marko's property and on cell dike walls.



454 6/24/92 Centerville C site: view from terrace of east slope of hydromulched areas in channel, on Marko's property and on cell dike walls.



455 6/24/92 Centerville C site: 1 of 2 panorama from south to north overlooking cell 1 and cell 2. Tire tracks in cell 2 where JD 555 was used to dump coversoil on dike walls.

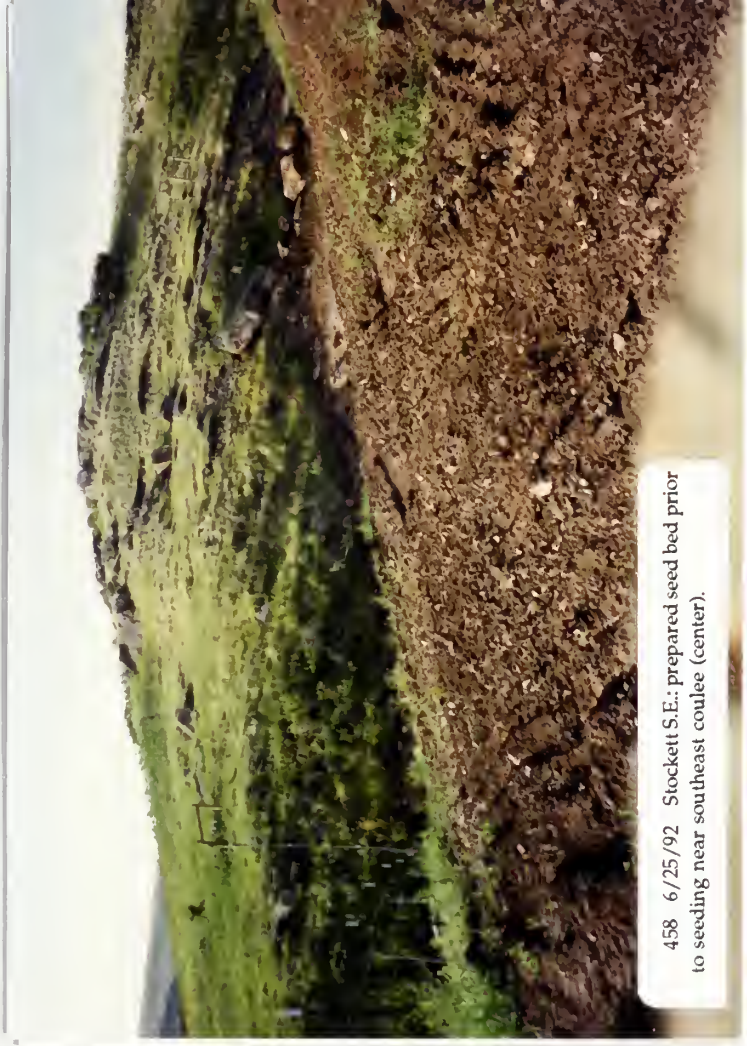


456 6/24/92 Centerville C site: 2 of 2 panorama overlooking cell 2 and cell 3. Note some cattail growth in cell 3, compared to 6/8/92, also weed growth in cell 2.

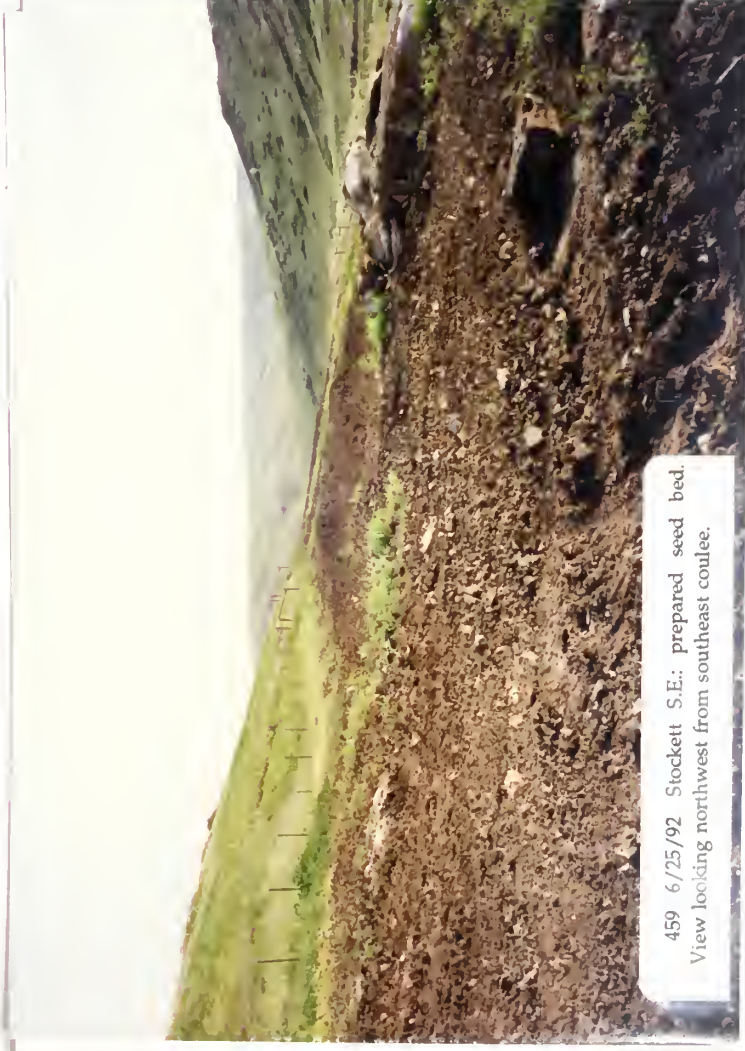




457 6/24/92 Centerville C site: hydromulched east slope.



458 6/25/92 Stockett S.E.: prepared seed bed prior to seeding near southeast coulee (center).

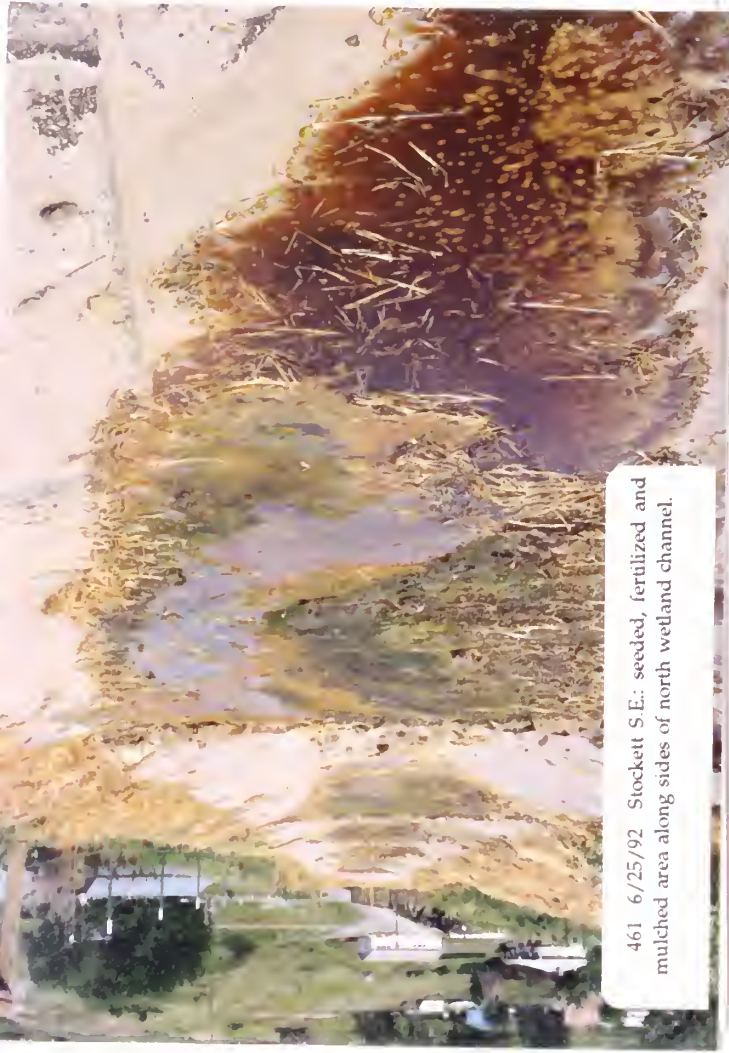


459 6/25/92 Stockett S.E.: prepared seed bed. View looking northwest from southeast coulee.



460 6/25/92 Stockett S.E.: seeding near southeast coulee. Brillon drill not distributing seed so seed is being broadcast from back of JD 555.





461 6/25/92 Stockett S.E.: seeded, fertilized and mulched area along sides of north wetland channel.



462 6/25/92 Stockett S.E.: seeded, fertilized and mulched area along sides of north wetland channel.



463 6/25/92 Stockett S.E.: slump area along north wetland channel after seeding, fertilizing and mulching.



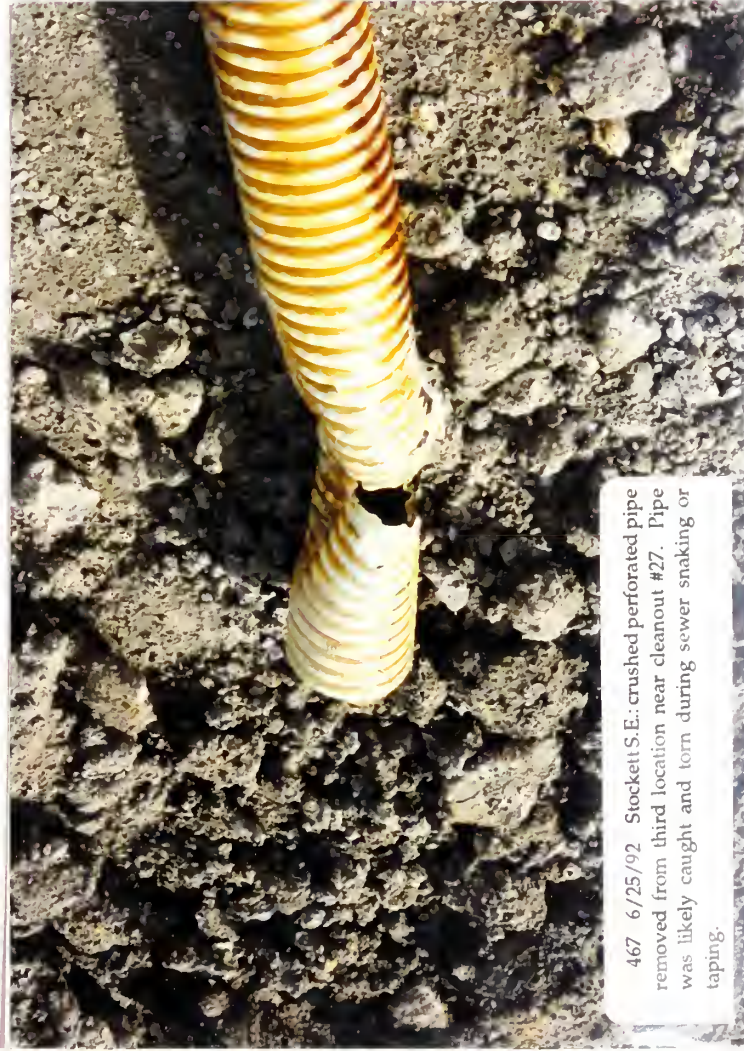
464 6/25/92 Stockett S.E.: confluence of wetland channels after seeding, fertilizing and mulching.



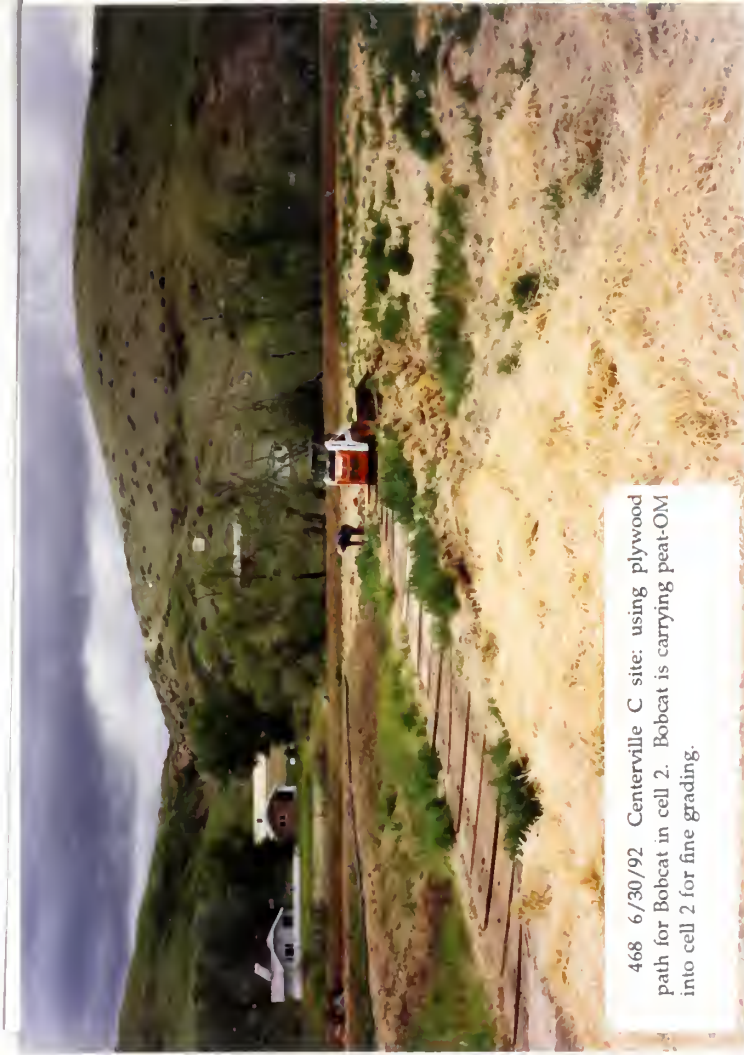
465 6/25/92 Stockett S.E.: using Bowie mulcher to blow mulch on area near southeast coulee.



466 6/25/92 Stockett S.E.: crushed perforated pipe removed from third location near cleanout #27. Pipe was likely caught and torn during sewer snaking or tapping.



467 6/25/92 Stockett S.E.: crushed perforated pipe removed from third location near cleanout #27. Pipe was likely caught and torn during sewer snaking or tapping.



468 6/30/92 Centerville C site: using plywood path for Bobcat in cell 2. Bobcat is carrying peat-OM into cell 2 for fine grading.





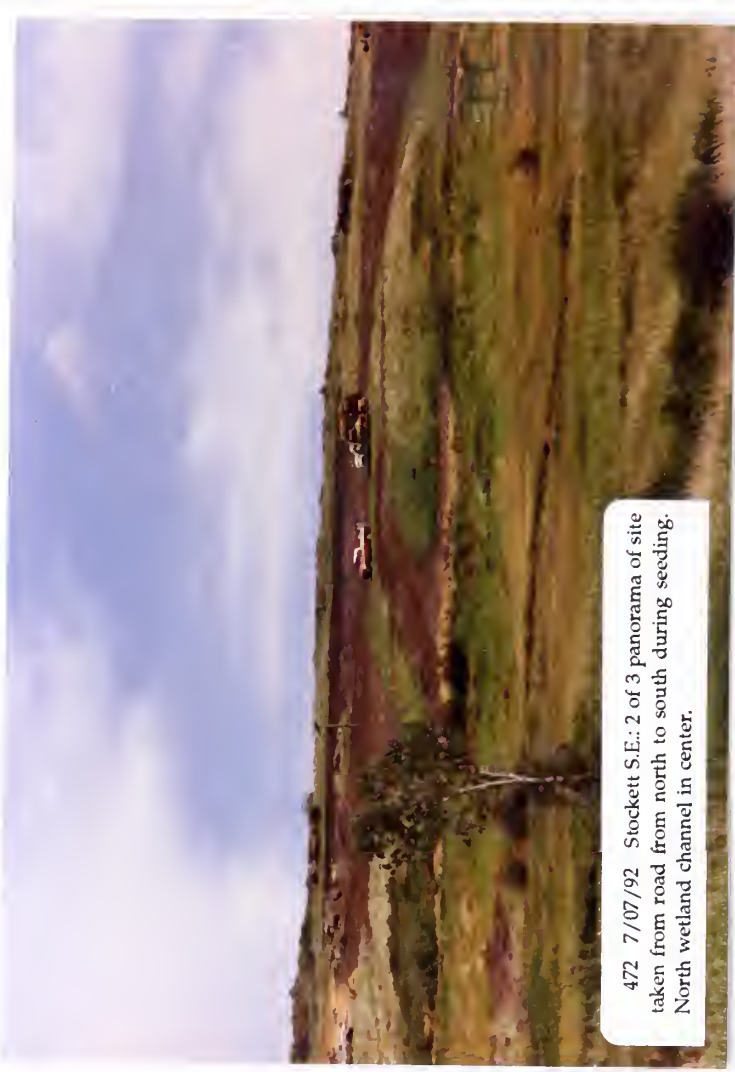
469 6/30/92 Centerville C site: pec-mat placed in channel from stilling basin to culvert.



470 6/30/92 Centerville C site: placing pec-mat in channel down stream from culvert. Mat is keyed in on edges and every 50' down length of channel.



471 7/07/92 Stockett S.E.: 1 of 3 panorama of site taken from road from north to south during seeding. Shows completed area.



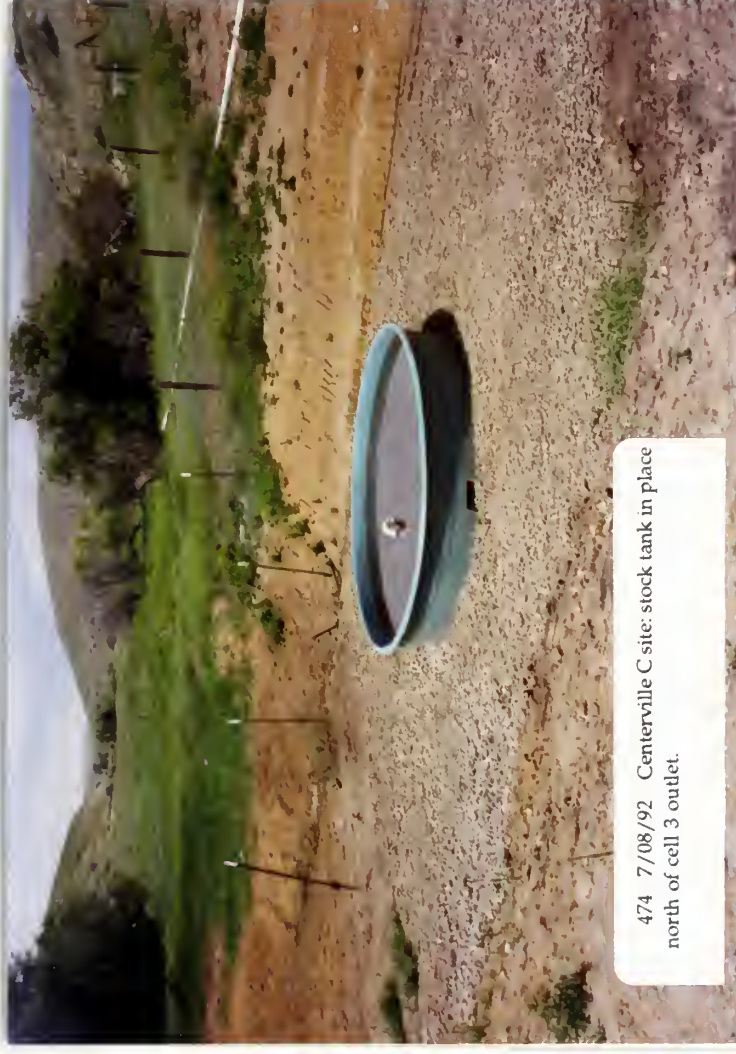
472 7/07/92 Stockett S.E.: 2 of 3 panorama of site taken from road from north to south during seeding. North wetland channel in center.



473 7/07/92 Stockett S.E.: 3 of 3 panorama of site taken from road from north to south during seeding.



474 7/08/92 Centerville C site: stock tank in place north of cell 3 outlet.



475 7/08/92 Centerville C site: stock tank in place looking south toward cell 3.



476 7/08/92 Centerville C site stock tank in place with control valve in foreground.







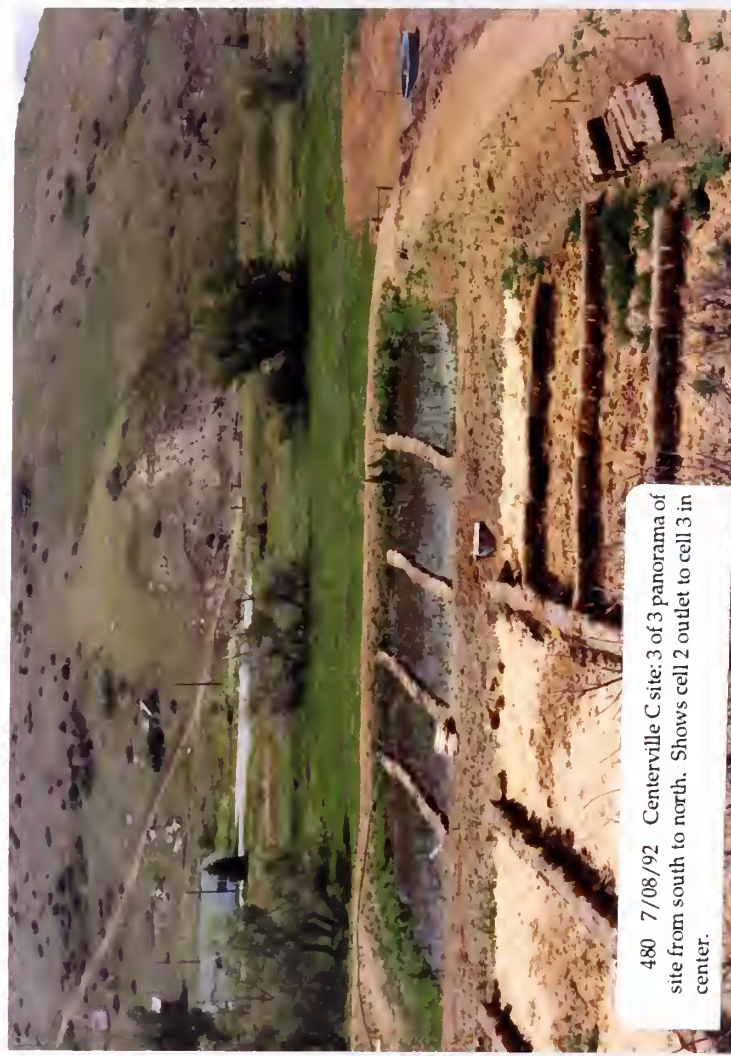
477 7/08/92 Centerville C site: outlet from cell 3 (stock tank by-pass) in channel with riprap protection.



478 7/08/92 Centerville C site: 1 of 3 panorama of site from south to north. Shows cell 1.



479 7/08/92 Centerville C site: 2 of 3 panorama of site from south to north. Shows cell 1. Shows crew laying plywood path for Bobcat during placement of hay bale dikes and fine grading.

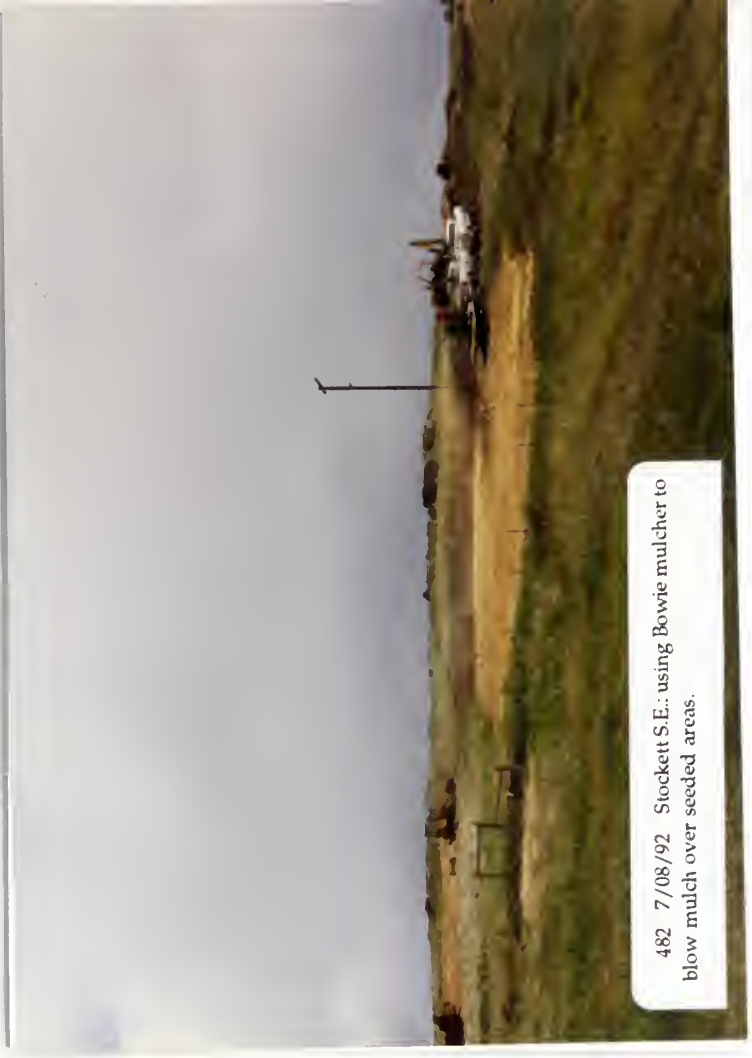


480 7/08/92 Centerville C site: 3 of 3 panorama of site from south to north. Shows cell 2 outlet to cell 3 in center.





481 7/08/92 Stockett S.E.: using Bowie mulcher to blow mulch over seeded areas.



482 7/08/92 Stockett S.E.: using Bowie mulcher to blow mulch over seeded areas.

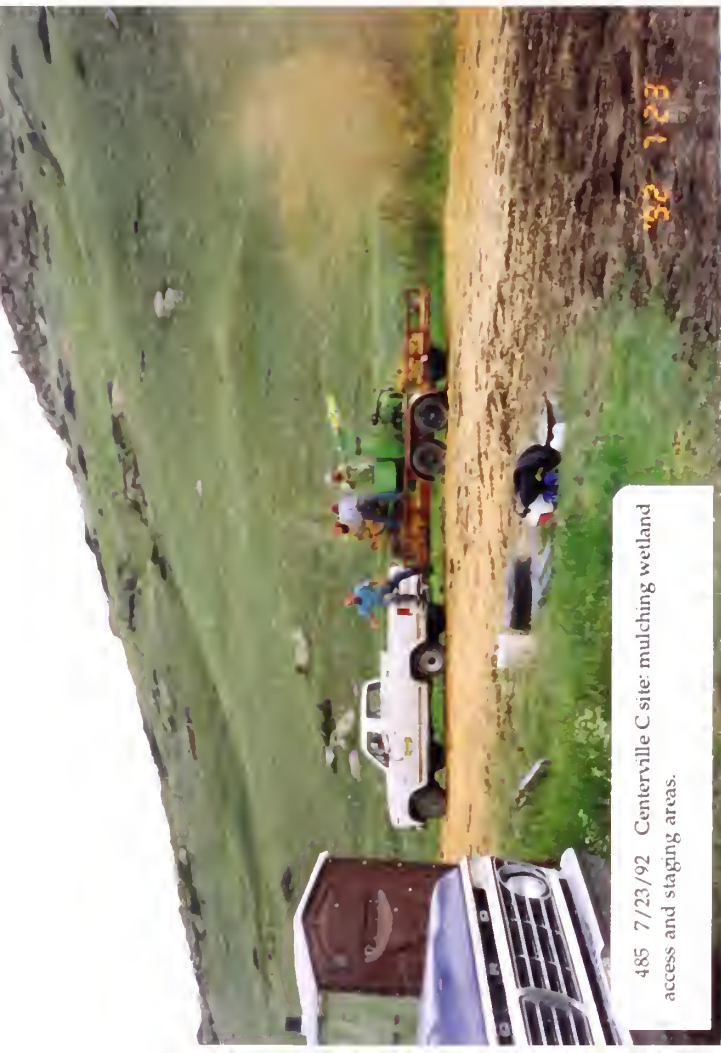


483 7/08/92 Stockett S.E.: main access to north end of site, just after seeding with Brillion seeder.



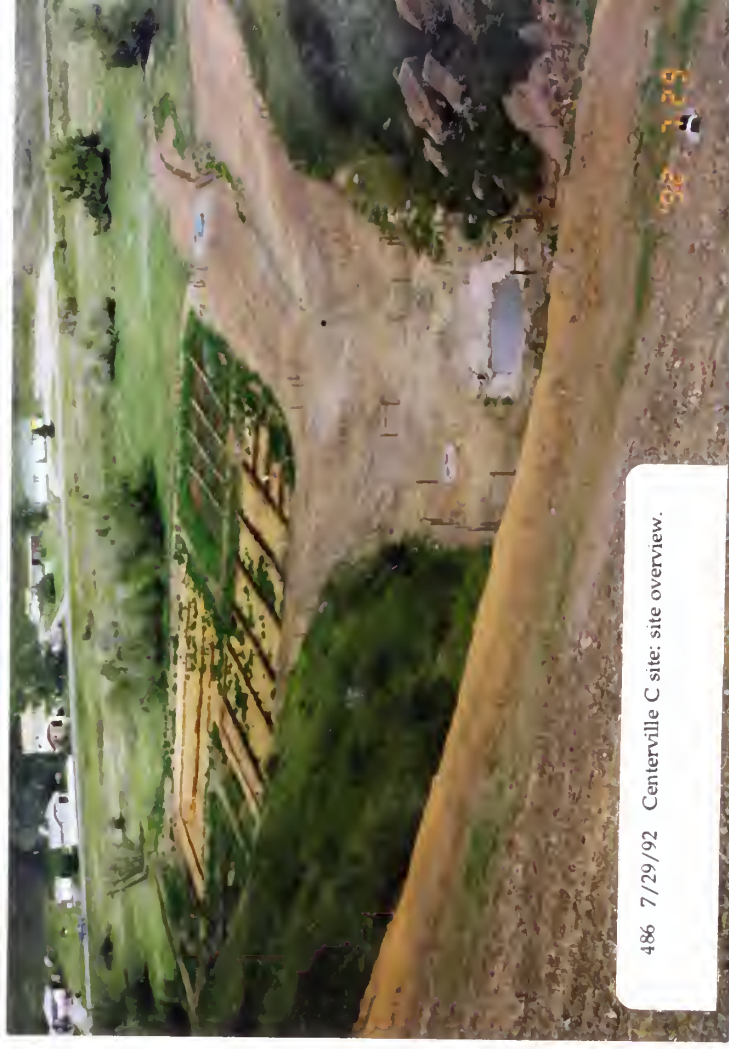
484 7/23/92 Centerville C site: mulching wetland access and staging areas.





485 7/23/92 Centerville C site: mulching wetland access and staging areas.

92 723



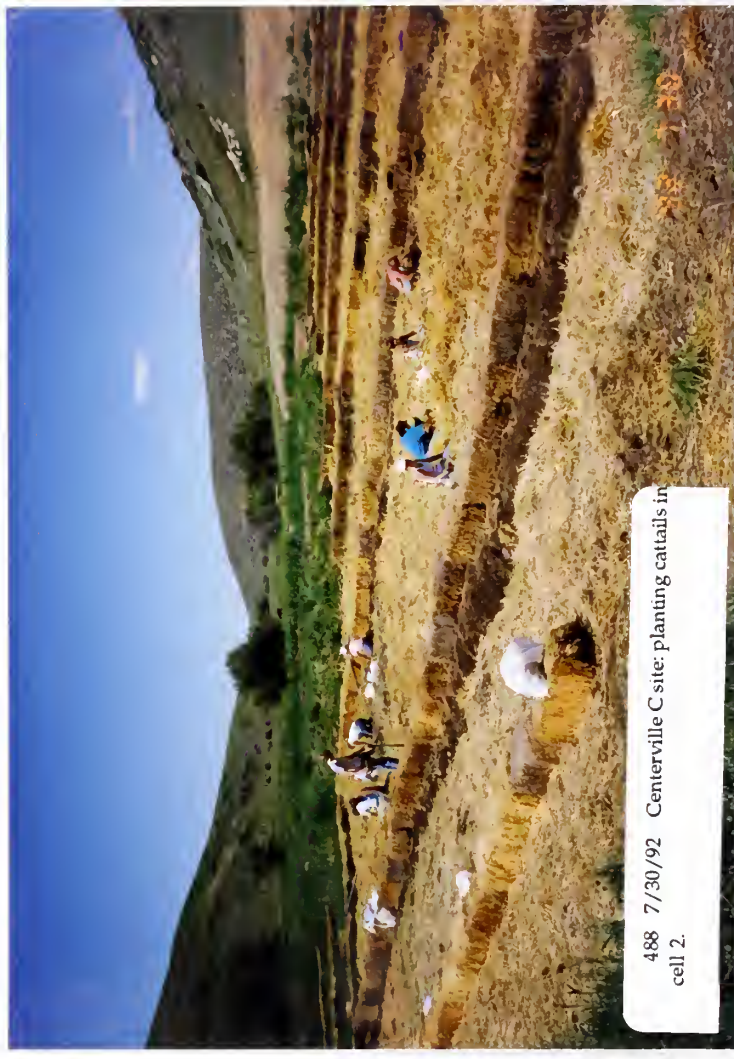
486 7/29/92 Centerville C site: site overview.

92 729



487 7/29/92 Centerville C site: upper NE corner finished slope above terrace, grass growing.

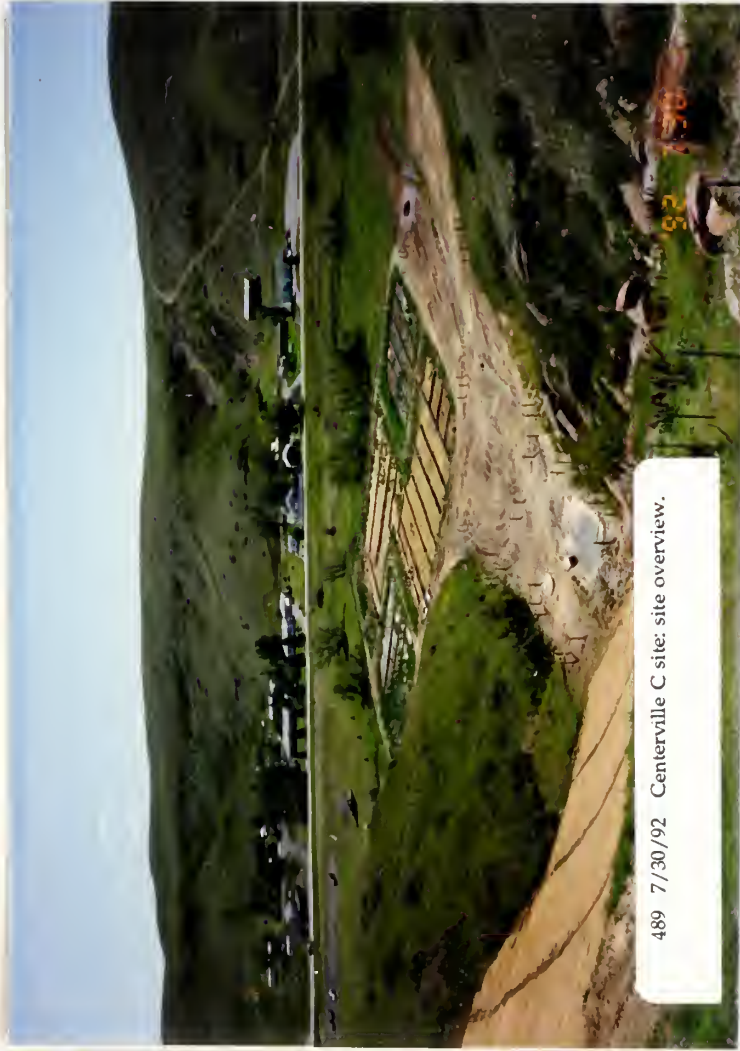
92 729



488 7/30/92 Centerville C site: planting cattails in cell 2.

92 730





489 7/30/92 Centerville C site: site overview.

92 7 30



490 7/31/92 Centerville C site: watering newly planted cattails.

92 7 31



491 8/6/92 Centerville C site: 1 of 4 site panorama, access and park.

92 8 8



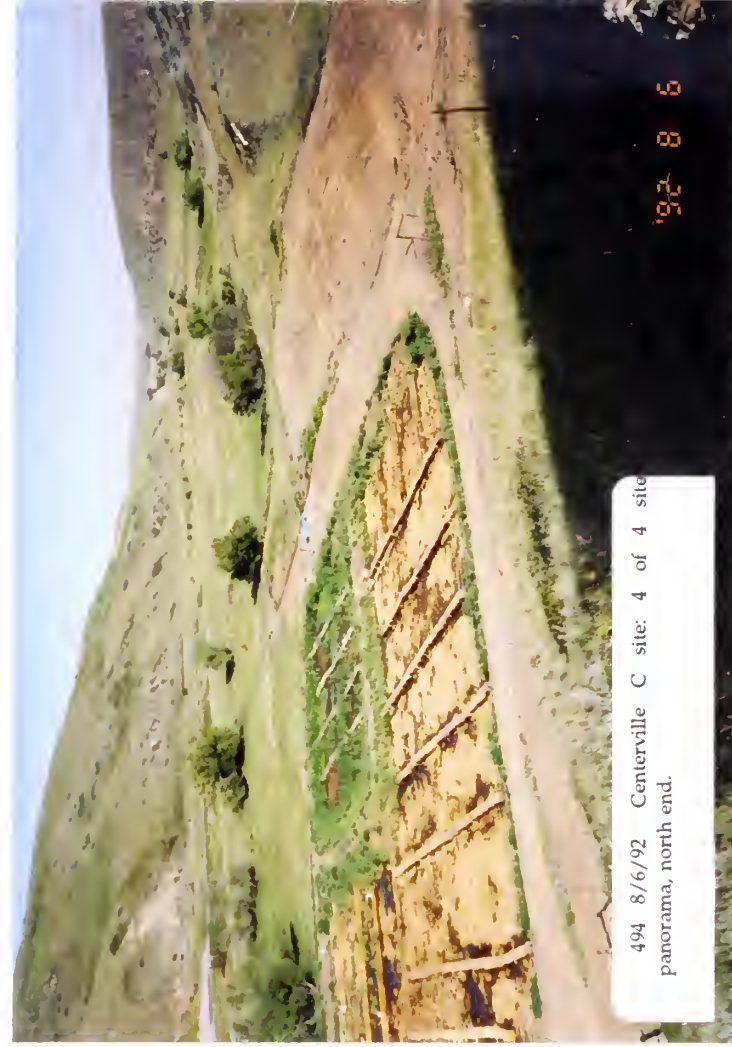
492 8/6/92 Centerville C site: 2 of 4 site panorama, park and wetland cells, planting last of cattails.

92 8 6

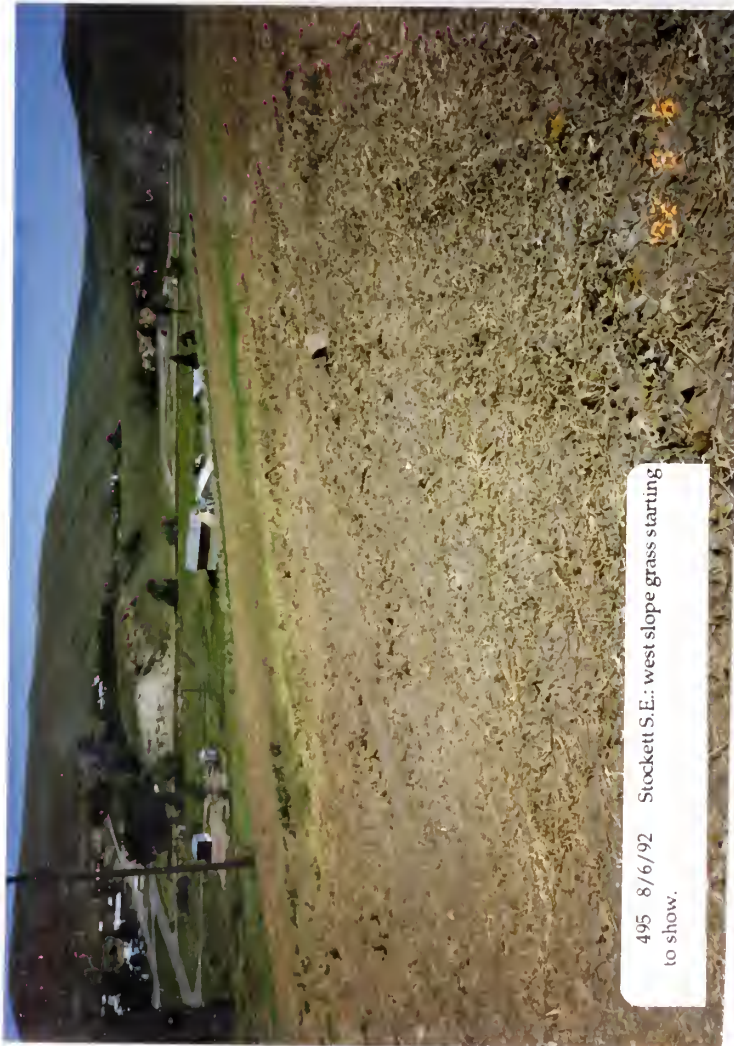




493 8/6/92 Centerville C site: 3 of 4 site  
panorama, planting last of cattails.

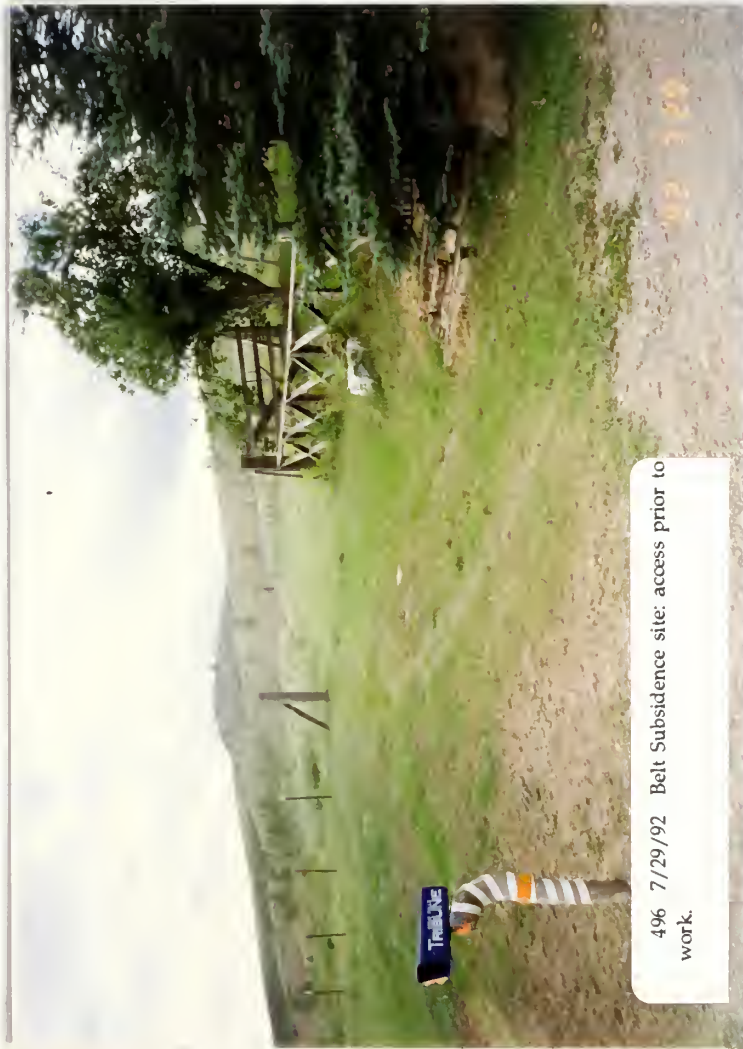


494 8/6/92 Centerville C site: 4 of 4 site  
panorama, north end.

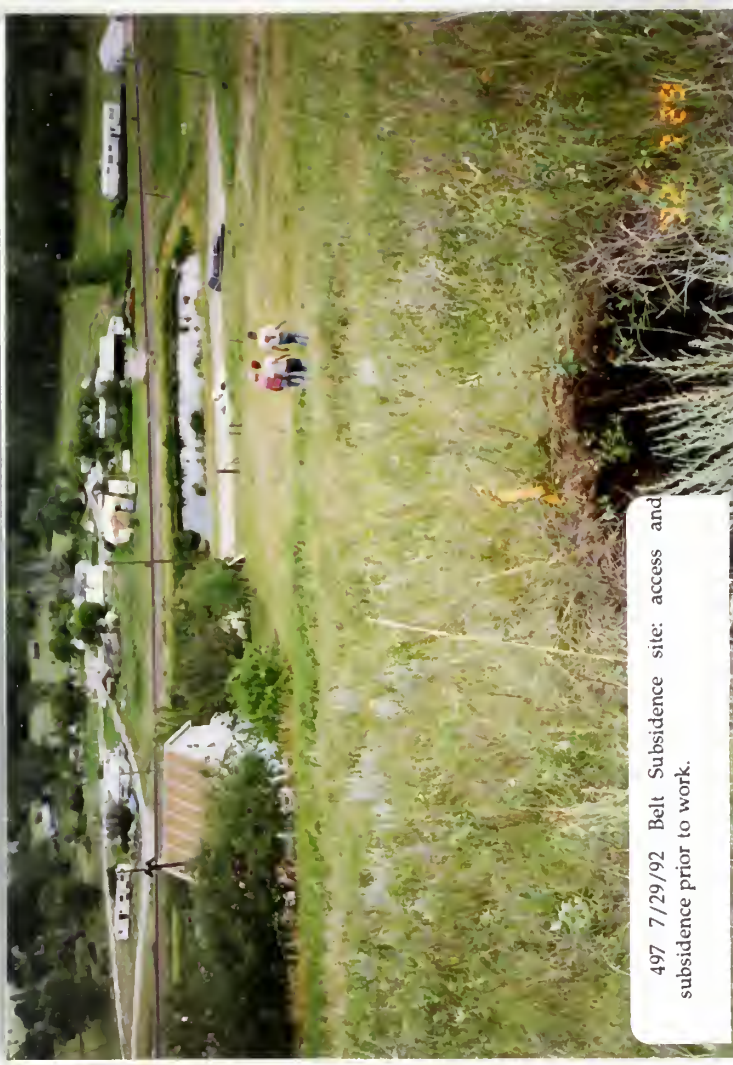


495 8/6/92 Stockett S.E.: west slope grass starting  
to show.

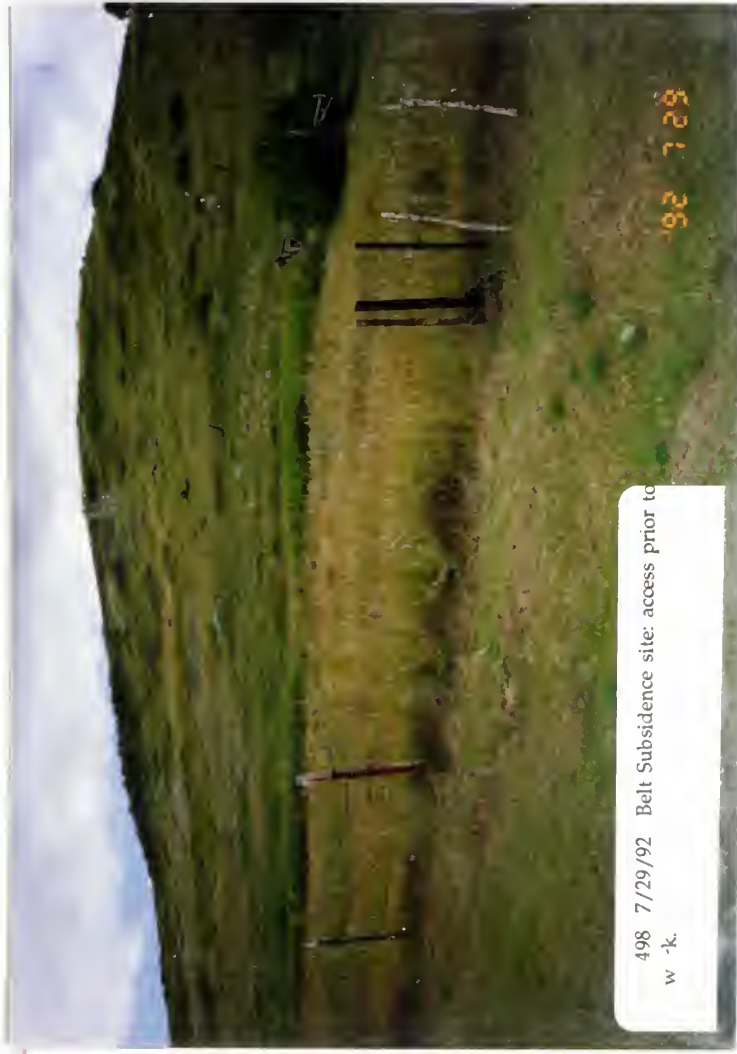




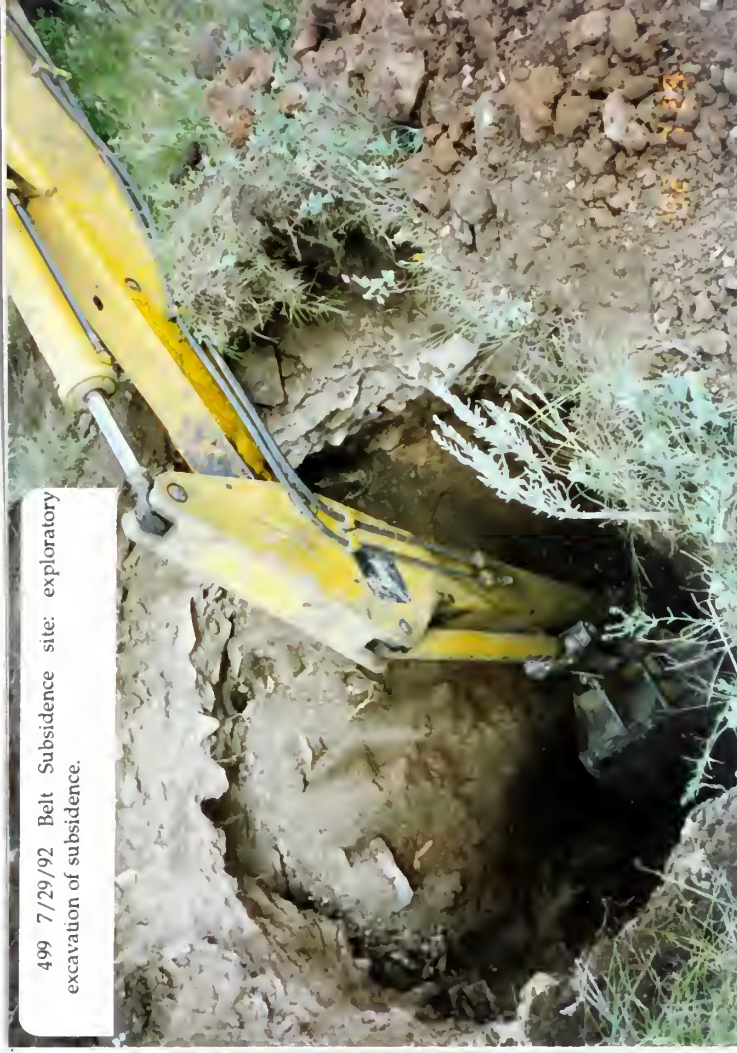
496 7/29/92 Belt Subsidence site: access prior to work.



497 7/29/92 Belt Subsidence site: access and subsidence prior to work.



498 7/29/92 Belt Subsidence site: access prior to work.



499 7/29/92 Belt Subsidence site: exploratory excavation of subsidence.





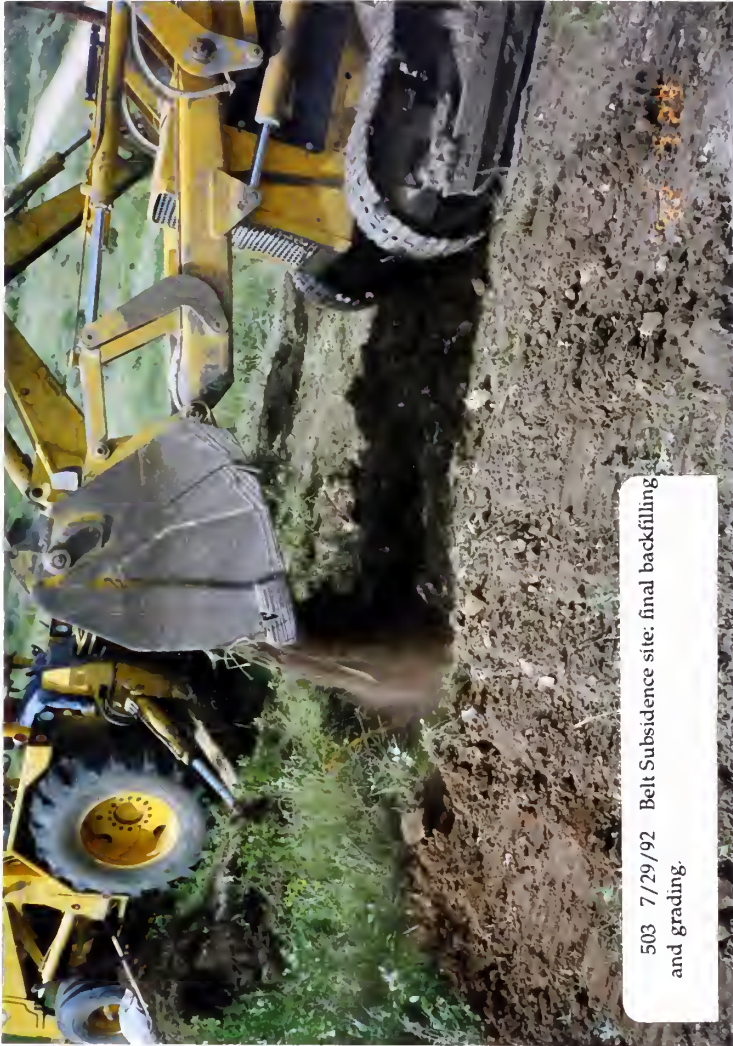
500 7/29/92 Belt Subsidence site: mobilizing rock backfill.



501 7/29/92 Belt Subsidence site: unloading rock backfill.



502 7/29/92 Belt Subsidence site: unloading rock backfill.



503 7/29/92 Belt Subsidence site: final backfilling and grading.





504 8/12/92 French Coulee site: exposed manhole location, excavation for valve in background.



506 8/12/92 French Coulee site: inside manhole after grouting.



505 8/12/92 French Coulee site: inside manhole after grouting.



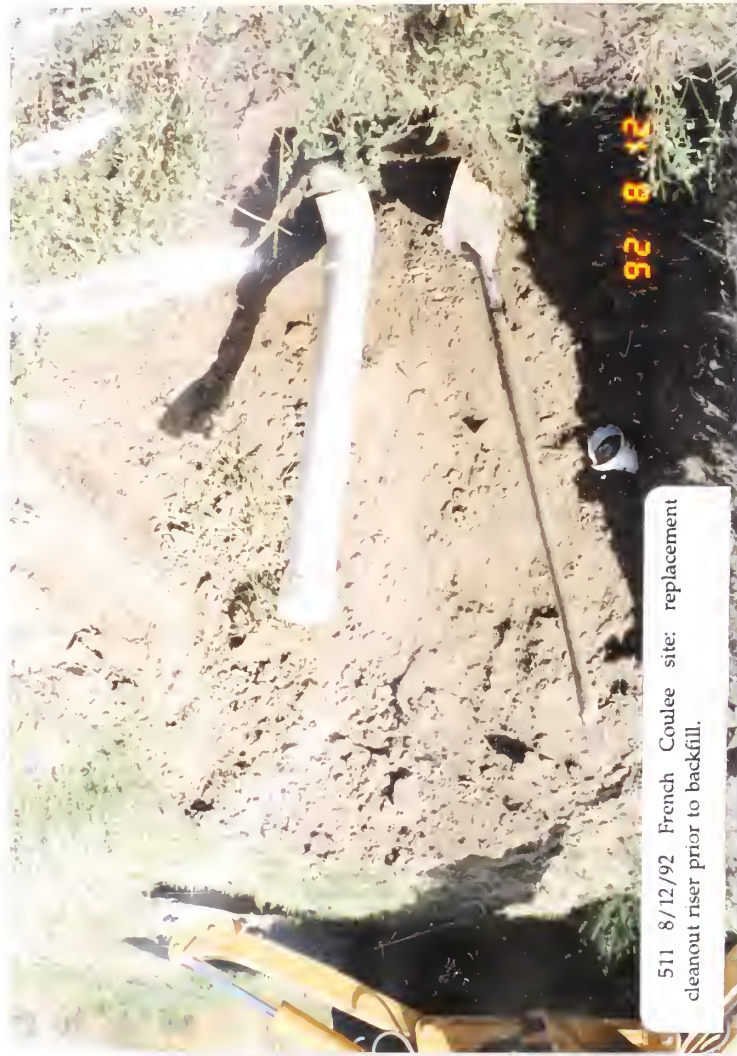
507 8/12/92 French Coulee site: installed valve prior to backfill.



509 8/12/92 French Coulee site: broken cleanout riser after excavation.



511 8/12/92 French Coulee site: replacement cleanout riser prior to backfill.



508 8/12/92 French Coulee site: installed valve riser prior to backfill.



510 8/12/92 French Coulee site: broken cleanout riser after excavation.









